PAPER TRADE JOURNAL

VOL. 123, NO. 1 JULY 4, 1946

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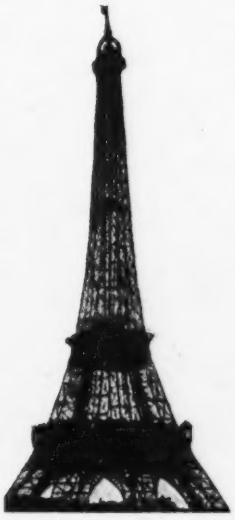

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Midwest Believes Trade Is Set to Go Ahead
Perkins Goodwin Celebrates 100 Years
Gross Heads New Container Institute
Road Groups Approve Dancy Project

Container Laboratories Shifts Assignments
American Expands Container Production
International Calls More Preferred
Nergstrom Additions Proceeding

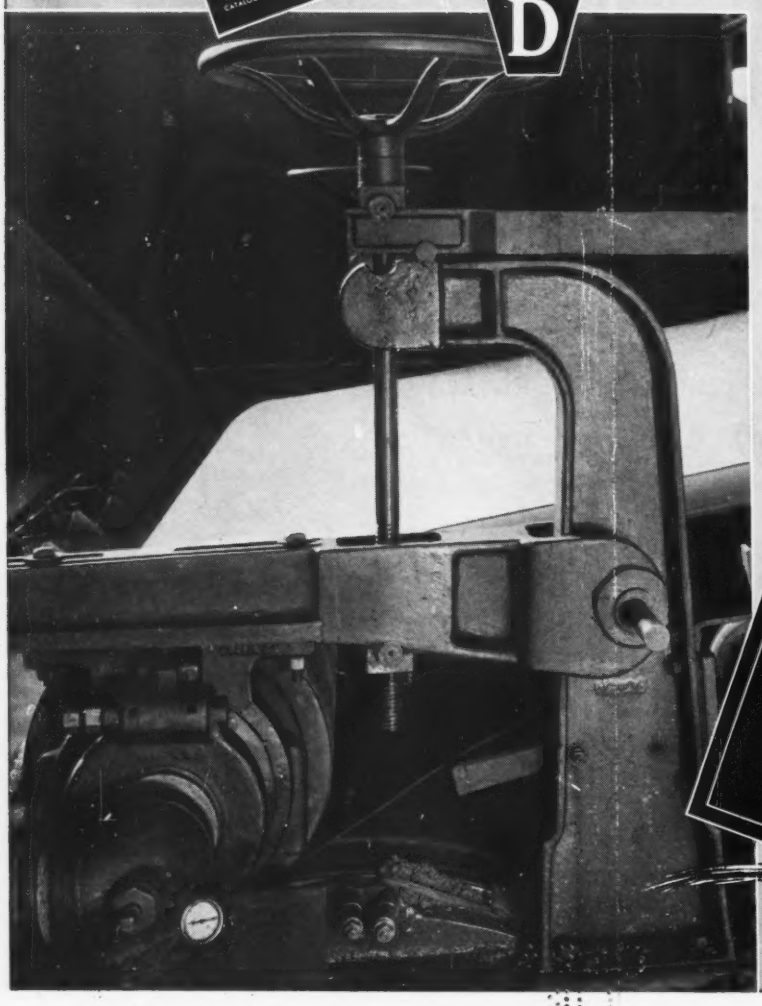
DOWNINGTOWN

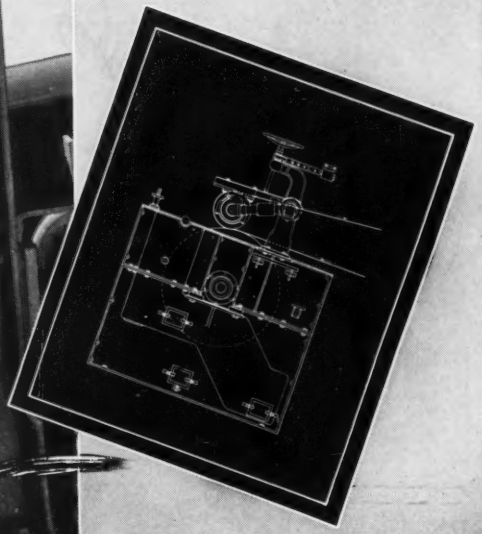
Designers & Builders
Paper Making Machinery

Proved "Before" and "During" the War—
Improved "Since"

Photograph and line drawing show a pre-war pioneering installation of the Downingtown Suction Cylinder Couch Roll on a flooring felt machine. Drawing on cover of our new Bulletin No. 1045 shows the new design. This roll does its couching by air pressure. Applicable to single or multi-cylinder machines. Send for Bulletin No. 1045.

DOWNINGTOWN MFG. CO.
DOWNINGTOWN, PA.





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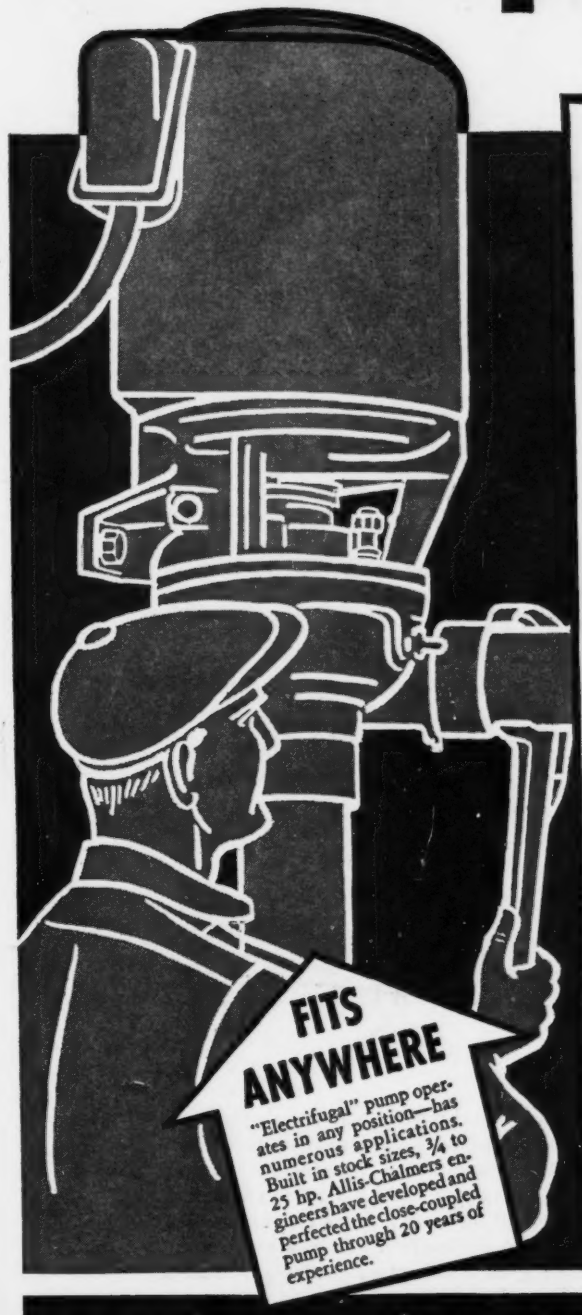
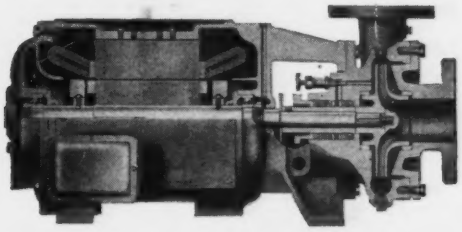
Hook Up...AND Pump!


FITS ANYWHERE
"Electrifugal" pump operates in any position—has numerous applications. Built in stock sizes, ¾ to 25 hp. Allis-Chalmers engineers have developed and perfected the close-coupled pump through 20 years of experience.



A-C "Electrifugal" Pump Cuts Installation Time

This compact "Package" pump comes fully assembled. No coupling to line up. Just bolt it down, make pipe and power connections — prime and pump! More than that, this pump costs you *less to buy — less to operate.* Read these interesting facts:

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Motor and pump are built into one rigid frame, with rotor and pump runner on a single shaft. Result: one third less space — fewer parts — *lower cost.*

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Packings, rotor, impeller, and all moving parts are easy to get at. Quickly taken apart, checked, and reassembled. Down time is reduced to a minimum.

LOW MAINTENANCE

Ample bronze wearing rings, bronze water seal and valve — shaft sleeve and deflector — five packing rings — precision workmanship — and other quality features all add up to longer life, less maintenance cost.

UNDIVIDED RESPONSIBILITY

Allis-Chalmers builds both pumps and motors — backs them up with unsurpassed experience and reputation in both fields. Call your A-C office for help on any pumping problem . . . or write for bulletin B6059. ALLIS-CHALMERS, Milwaukee 1, Wisconsin.

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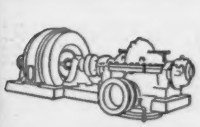
Electrifugal **PUMPS**



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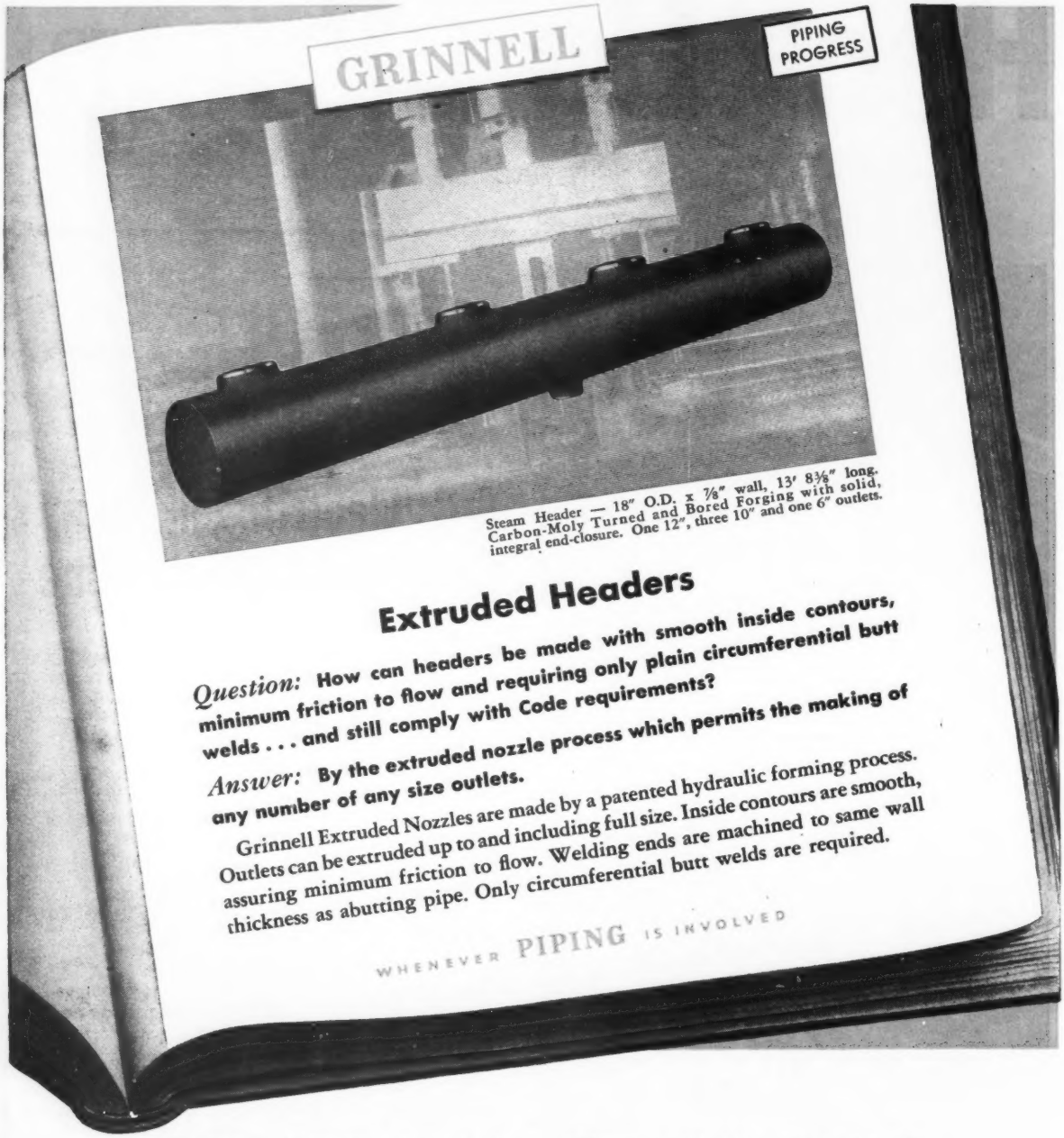
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Steam Header — 18" O.D. x 7/8" wall, 13' 8 3/8" long. Carbon-Moly Turned and Bored Forging with solid, integral end-closure. One 12", three 10" and one 6" outlets.
Extruded Headers
Question: How can headers be made with smooth inside contours, minimum friction to flow and requiring only plain circumferential butt welds . . . and still comply with Code requirements?
Answer: By the extruded nozzle process which permits the making of any number of any size outlets.
Grinnell Extruded Nozzles are made by a patented hydraulic forming process. Outlets can be extruded up to and including full size. Inside contours are smooth, assuring minimum friction to flow. Welding ends are machined to same wall thickness as abutting pipe. Only circumferential butt welds are required.
WHENEVER PIPING IS INVOLVED

Typical of Grinnell's advanced pipe fabrication facilities is this forming process for outlets in headers which simplifies erection of piping on the job by elminating difficult intersection type welds. They are made possible by this company's 95 years of piping experience and continuous laboratory research and experimentation.

Whenever piping is involved—Grinnell has the specialized knowledge, field engineering experience and the production facilities to handle the job from first plan to actual operation. From this one source you can get everything from a tiny tube fitting to a complete power or process piping installation.

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GRINNELL
FOUNDED 1850

WHENEVER **PIPING** IS INVOLVED

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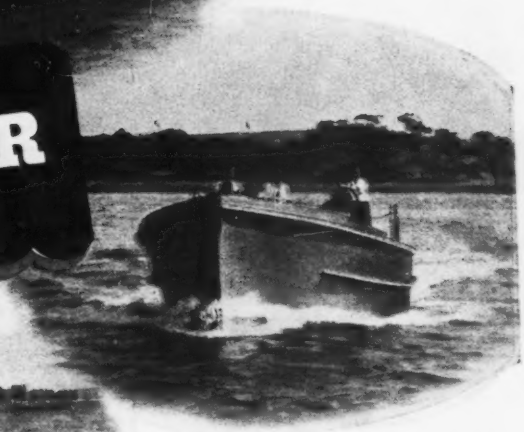
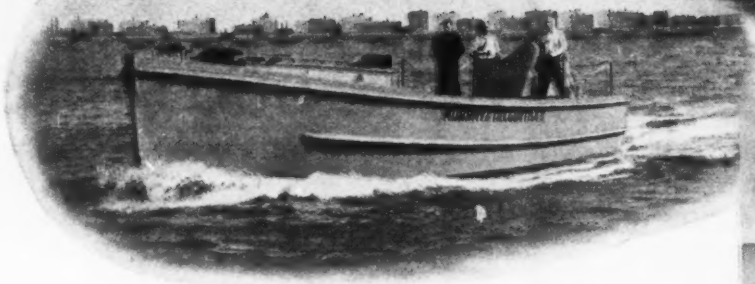
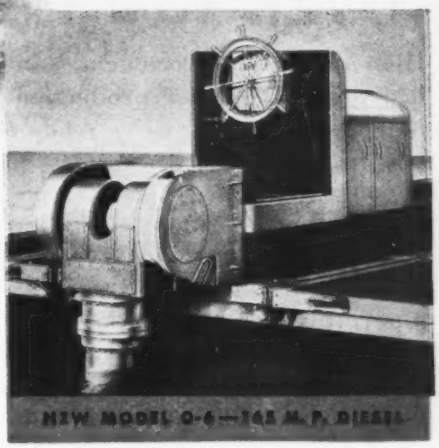
Illustrated: workboat 46' long, equipped with 110 H. P. "Harbormaster"

THE HARBORMASTER WORKBOAT







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Anti-Corrosive STAINLESS STEEL fastenings

OVER 100 ITEMS

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High priority government contracts have had first call on our production for a long time. Now, though, we're ready to help you —with a big stock of Stainless Steel Fastenings, ready to ship!

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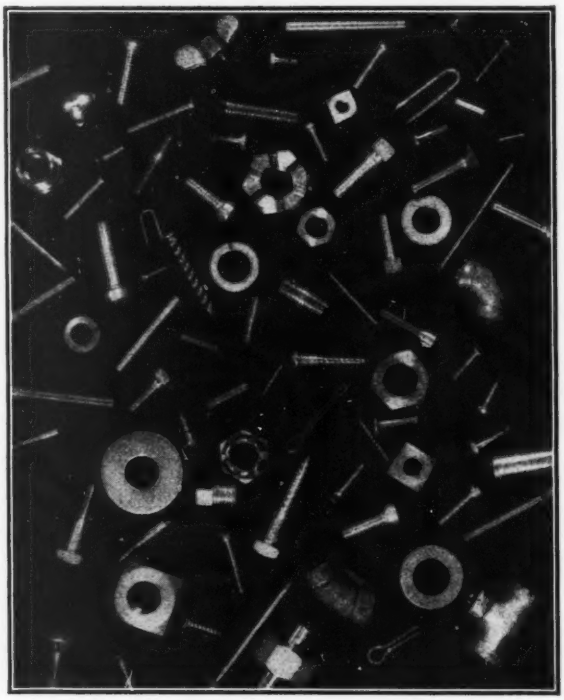
If any part of your product, or your production line, is exposed to corrosion from any source, Stainless Steel Fastenings give you the protection you need; we have those Fastenings to meet any situation—any type of corrosion—oxidation, high temperature, acids alkalies—fastenings to give you lasting service.



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Anti-Corrosive Metal Products Co. Inc.

CASTLETON-ON-HUDSON NEW YORK

What the New NORTON PULPSTONE *Markings Mean . . .*

37C546 - M 7 V

ABRASIVE

The letter indicates the kind of abrasive (A, aluminum oxide; C, silicon carbide) and the figure the particular type of that abrasive. Example:

A = Alundum abrasive
38A = 38 Alundum abrasive
37C = 37 Crystolon abrasive

GRAIN SIZE

The grain sizes used in pulpstones range from 16 (coarse) to 180 (very fine). A single size or a combination of sizes are used to suit specific conditions in different mills. The digits following the first letter in the marking indicate the grain size combination.

GRADE
(Hardness)

The grade or hardness of a pulpstone is really a measure of the strength of a bond that holds the grains of abrasive. It is designated by letters and the usual range in pulpstones is from J (soft) to S (hard).

STRUCTURE
(Grain Spacing)

The structure of a pulpstone refers to the relative spacing of the grains of abrasive. In the marking system it is designated by the number following the grade letter, the larger the number the more open the structure. The usual pulpstone range is from 5 to 12.

BOND

The letter following the structure number indicates the kind of bond. In pulpstones it is vitrified bond and is designated by "V". When the letter "P" is used following the "V" it indicates that the vitrified bond is of the large pore type.

The marking system used for Norton Pulpstones is the same as that employed by Norton Company for other types of grinding wheels and is based on the standard system of the Grinding Wheel Manufacturers Association. The typical marking given above, for example, means a pulpstone of 37 Crystolon (silicon carbide) abrasive, grain size combination 54/6, grade of hardness M, structure 7, vitrified bond.

Another typical marking is:
38A202 — 010VP

This means a pulpstone of 38 Alundum (aluminum oxide) abrasive, grain size combination 20/2, grade of hardness 0, structure 10 (open), vitrified bond of the large pore type.

Another example:
A6012 — L7V

This indicates a Norton pulpstone of Alundum abrasive, grain combination 60/12, hardness L, structure 7, vitrified bond.

You can be sure that there are Norton markings to designate the exact stone which you should have for each grinder in your mill.

NORTON COMPANY
WORCESTER 6, MASS.
NORTON COMPANY OF CANADA, LTD.
HAMILTON, ONTARIO

NORTON ABRASIVES

PAPER · · · America's 6th Industry

PAPER CORD FOR RUG-BACKING

(NEWS ITEM: *Paper yarn is replacing jute in the manufacture of rug-backing.*)

Rug-backing yarn, made of Kraft paper with high wet strength, is being used instead of jute on a large percentage of domestic rugs. It is unusually smooth, lies flat and sheds water. This new paper yarn prolongs the life of carpet pile and keeps rugs new-looking longer.

Paper bags for vacuum cleaners . . . paper tape to record sound . . . paper cans for frozen foods . . . New uses for paper calling for new standards of lightness and toughness, new standards of quality in performance. New responsibilities—new opportunities for the Pulp and Paper Industry.

The Puseyjones Organization is now devoting itself completely to the design and construction of Paper-Making Machinery built to new high standards of speed and efficiency, and to the modernization of existing machines.

Among the new machines under construction by Puseyjones are three of the largest and fastest Fourdrinier Machines, one for book and high grade printing, one for white paper for bags, and one for Kraft liner board; also one Cylinder machine of record size and speed for the manufacture of floor covering felt. Other machines are under construction for the manufacture of M. G. Kraft specialties, facial tissues, and high grade bristols.

Puseyjones Engineers will welcome the opportunity to work with you in solving production problems.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U. S. A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

PAPER TRADE JOURNAL
Vol. 123, No. 1 July 4, 1946
Title Reg. U. S. Pat. Off.

Highway Committee Favors Dancy Plan

WAUSAU, Wis.—A special committee consisting of members of the road and bridge, special highway and judiciary committees of the Marathon County Board of Supervisors, will recommend at a meeting July 8 of the county board that County Trunks O and S in the southern part of the county be vacated in favor of the proposed construction of the new Dancy reservoir in the Little Eau Pleine river basin.

The decision was made after M. W. Kyler, general manager of the Wisconsin Valley Improvement Company of this city, declared that the company had agreed to a demand voiced at the county board meeting in April that the company construct a complete bridge on the relocation of County Trunk M, and after long discussion on other points.

James Baravetto, town of Knowlton, chairman of the board, presided at the committee meeting and said the offer of the company to complete the bridge, instead of having the county pay for the superstructure as first proposed, meant a saving of between $40,000 and $50,000 to the county, if the project is completed.

Following the committee action, Mr. Kyler expressed his appreciation to the board members and gave assurance of company cooperation throughout construction. He had previously told committee members that negotiations from now on would be with the Improvement company rather than with the Consolidated Water Power and Paper Company of Wisconsin Rapids, in accordance with arrangements made at a meeting of the two corporations on May 14.

Tucker Succeeds Reed In Technical Post

DALTON, Mass.—L. B. Tucker succeeds the late E. O. Reed as technical director of Crane & Company. Mr. Tucker attended the New York State College of Forestry at Syracuse University, where he took the course in Pulp and Paper Manufacture. He graduated in 1928 receiving a B.S. degree.

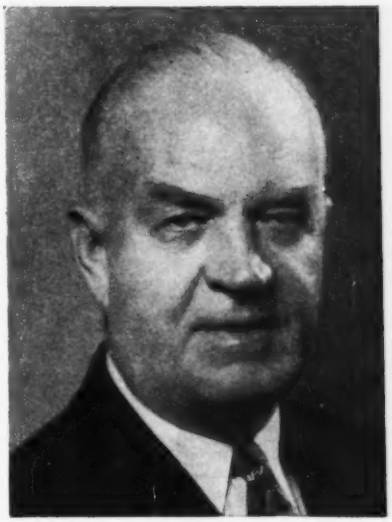
Following his graduation he worked for a year in Washington under Mr. Reed, who was then technical director of the Government Printing Office. Mr. Tucker came to Dalton with Mr. Reed in 1929 and has been his assistant since that date.

Midwest Believes Trade Is Set to Make Gains

CHICAGO—Just a few hours prior to disposal of the Emergency Price Control problem, either permanently or for another year, The Chicago paper trade indicated a belief that whatever the outcome, in any event, the price control restrictions would not be severe and that production could gather much greater impetus. Lack of incentive pricing, along with shortages in labor, chemicals and integral materials, still was felt to be a strong deterrent to the trade which, despite such travails, had done such an excellent job in the past few years.

All lines in the Chicago market continued at ceiling peaks and demand gathered momentum although the general position of the business world to wait until OPA was disposed of one way or another, was having some effect on scheduling of jobs. Of concern to all branches of the trade was the market position following July 1, the end of the current Price Control Act. Efforts to avoid "open order buying" in favor of firm commitments all along the line, characterized the local jobber and printer market, according to reports.

Waste paper was being readily taken at ceiling prices and mills in this region were said to be adding slightly to inventories, as a stated relief to previous trends.



LOUIS CALDER
Celebrates Perkins-Goodwin's 100th Anniversary

Toast Anniversary Of Perkins-Goodwin

Some seven hundred friends, associates, and staff of the Perkins-Goodwin Company were entertained at dinner on Monday night in the Waldorf-Astoria, New York City, by Louis Calder, president of that company, in honor of the 100th anniversary of its founding. Himself lacking only a few months of fifty years with the company, twenty-five of them as its president, Mr. Calder was the recipient of heartfelt encomiums from the entire gathering, from speakers who ranged from Sweden and Canada to Texas in their origins, and by letters that included Germany and England in the paper interests that they represented. The first hundred years, they all agreed, are the hardest; the future should be easy from now on.

Under the masterly toastmastership of Lemuel Schofield, former Government official, former Philadelphia official, attorney and a director of the Philadelphia Daily News, an impress-

(Continued on page 26)

J. H. Allen Elected to St. Regis Board

J. H. Allen, president of the Florida Pulp and Paper Company, Pensacola, has been elected a member of the board of directors of St. Regis Paper Company. Purchase of the Florida Pulp and Paper Company by St. Regis, marking St. Regis' entry into the southern kraft pulp and paper industry, was disclosed June 18. Mr. Allen will continue as president of Florida Pulp and Paper and will direct operations of the firm. Mr. Allen also is president of the Alabama Pulp and Paper Company, which is building a 250-ton kraft paper mill on a site adjacent to the Florida Pulp and Paper Company property. St. Regis obtained an equity in the Alabama Company at the time of the purchase of Florida Pulp and Paper.

Chicago Merchants Conserve Wrapping

CHICAGO—The Chicago Retail Merchants Association has released instructions to members as to how to conserve kraft and other types of wrapping paper. The Association warns that "there is little prospect these shortages will be relieved in the foreseeable future." The Association proposed that economies include six recommendations.

"1. Do not wrap or bag merchandise which is packed in the store's own merchandise box or pre-packaged by the manufacturer.

"2. In consolidating customer packages at service desks do not use wrapping papers. Consolidate packages by use of string, twine or gummed tape.

"3. Whenever possible, consolidate two or more packages by placing the merchandise in the same bag and removing the wrapping materials from the smaller items when the re-claimed materials can be re-used.

"4. Do not use both wrapping paper and a bag to package any item. Whenever possible, use the smallest box or bag rather than a sheet of paper.

"5. Remove wrapping paper from all incoming merchandise and sort, store and trim such wrapping paper so that it may be re-used. If re-claimed materials can not be used for wrapping customer packages, they can be used for protection of merchandise on interstore transfers or for other internal operation where protection is necessary or desirable.

"6. Through the use of signs and other means, remind employees at all cashier and wrapping desks, shipping rooms, service desks and similar points at which packages are wrapped, of the critical shortage of wrapping materials and of the need for conservation of materials."

Kimberly-Clark Construction Is Making Headway

NEENAH, Wis. — Kimberly-Clark Corporation's new parking area along the spur track on the north side of the Badger-Globe mill is expected to be ready August 15. Permanent sheet piling has been sunk 16 feet along the river edge, and the fill was to be put in this week. It will be up to the level of the track and will stretch back 580 feet to provide the parking area. Good topping is to be placed on the fill to assure the additional parking space for workers at the Kimberly-Clark offices and the Badger-Globe mill.

Other contracting crews of the Fluor Brothers Construction Company are working part time on the new addition to the corporation's Lakeview Mill, while crews and cranes of the Bethlehem Steel Corporation are putting up steel girders.

Six carloads of girders have been unloaded in the new pit of the new addition and two more carloads were on the track for unloading last week. The new addition will be of brick and tile and will house what is reported to be the world's fastest paper machine.

Nekoosa Edwards Starts New Calender Stack

PORT EDWARDS, Wis.—With the addition of a super calender stack at the local mill of the Nekoosa-Edwards Paper Company, another step in the postwar improvement and expansion program has been taken. The new stack has nine rolls and will accommodate paper trimming 66 inches and will make it possible to achieve higher and more uniform finishes, company spokesmen said.

Although plans call for use of the stack at Nekoosa in the new special products division, the equipment will be operated at Port Edwards for several months, awaiting completion of the new division, which is well under way. The new 140 by 111 foot brick building is being erected on the west bank of the Wisconsin river. When construction of the new division has been completed, the stack will be transferred to Nekoosa where it will be used in the production of high-finish specification papers.

During the period that the equipment is at Port Edwards it will be used in research work to develop various degrees of finish. This will also afford the operators an opportunity to receive additional training and experience with the equipment.

Paper Credit Group Golfs And Dines at Bull's Eye

WISCONSIN RAPIDS, Wis.—About 20 members of a paper industry credit group met at Bull's Eye Country Club on June 21 for a quarterly session. O. H. Jahns' cashier of the First American State Bank at Wausau, Wis., spoke on the relationship between bankers and credit men. His talk was given at a dinner following informal golf competition. Mutual credit problems also were discussed.

Earl Starks, Consolidated Water Power and Paper Company, assistant secretary, was general arrangements chairman. Vern Ames, Appleton, of Kimberly-Clark Corporation, is permanent chairman of the organization.

Bull Elected to Mando Board

MINNEAPOLIS—Daniel F. Bull, president of Cream of Wheat Corporation, was elected a director at a meeting of the Board held last week at International Falls. Mr. Bull, a native of Grand Forks, N. D., and a graduate of the University of North Dakota, is also a director of the First National Bank, the First Bank Stock Corporation, the Northwestern National Life Insurance Company of Minneapolis, the Household Finance Company of Chicago, and the Northern Pacific Railway.

Kenney Outlines His Sapeye Golf Plans

CHICAGO — J. C. Kenney, new and obviously aggressive chairman of the golf committee of the Salesmens Association of the Paper Industry, western division, has his announcements out for the initial golf outing of the season to be held at the Park Ridge Country Club on Friday, July 19. The easily accessible and sporty golf course is certain to attract a large number of members and guests who can play all day "if they wish" but must concentrate on afternoon tournament play for prizes. Luncheon will also be served as a part of the program while golf players will have "lots of prizes with everyone having an equal chance to win." Inasmuch as this is to be the first golf outing with war time worries, duties and vexation, Chairman Keeney expects to get things started off with a bang.

On July 15, Monday, the SAPEYES will have an open meeting at which time the interesting picture "Paper—Pacemaker of Progress" will be shown for the edification of those unfortunate enough not to be able to attend the New York convention.

Bergstrom Additions Proceeding Slowly

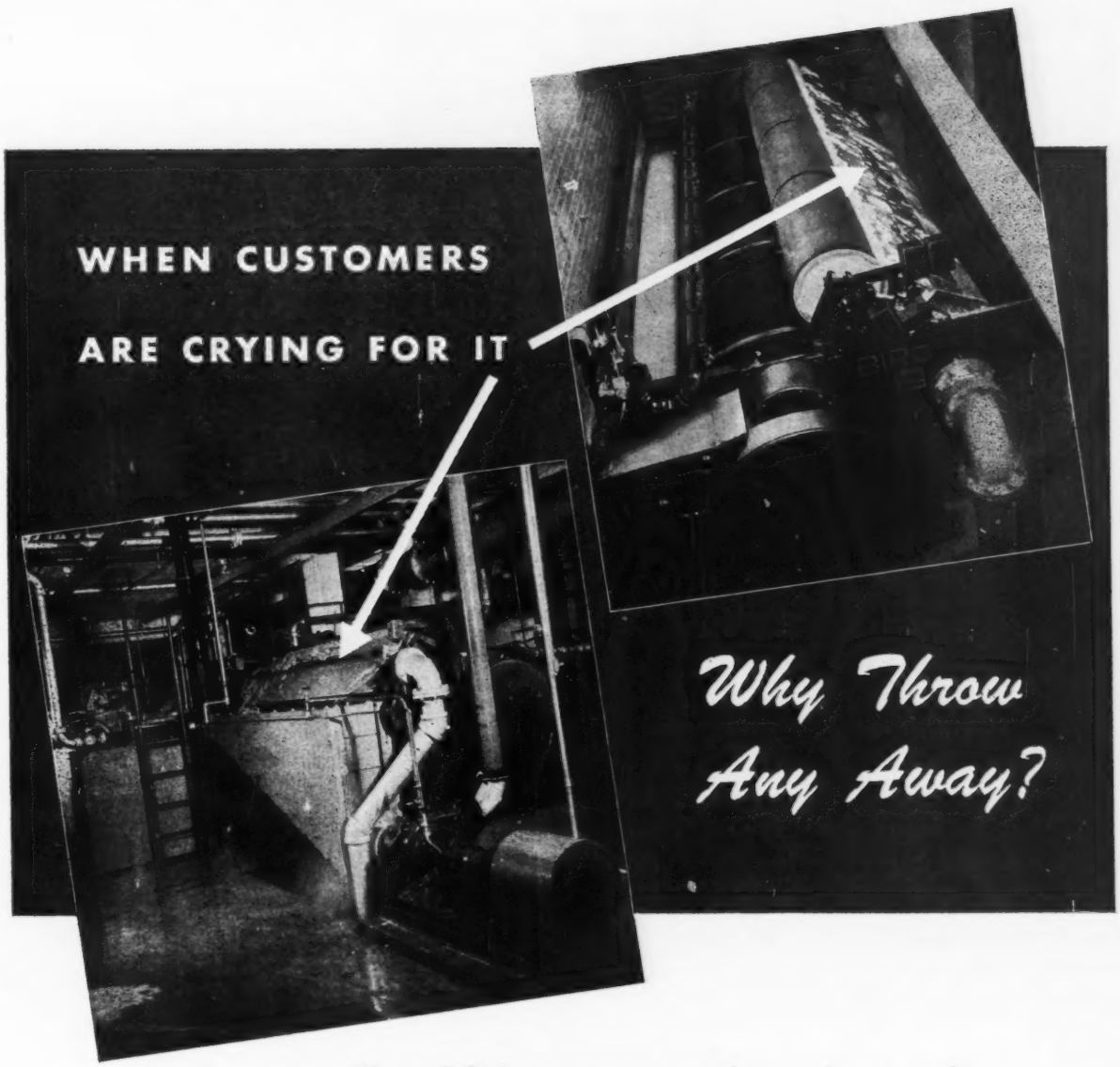
NEENAH, Wis. — Lack of materials has delayed the modernization project within the mill of the Bergstrom Paper Company as well as other construction work for which a permit was issued May 20, but the boiler house, damaged in an explosion last year, has been completed except for the windows.

Contractor crews are working on alterations in the beater room equipment but other work included an additional room for the laboratory, a women's rest room off the finishing room, and raising of the roof in one section of the mill.

Nathan Bergstrom, company executive, declared last week that there are about 15 small projects included in the alterations and addition plan. Estimated cost of the entire project is $35,000.

Long Heads Professional Group

The Chicago Professional Paper Group will be headed next season—the program year of the fast growing group beginning in September — by F. D. Long, Container Corporation of America. Other officers elected were: A. K. Roach, William H. Welsh Company, vice president; Warren Price, Applied Research Service, secretary and Cliff Swett, National Wax Company, treasurer. While the officers were elected May 20 and confirmed at the final June meeting on June 17 in accordance with the by-laws, the slate will not be formally installed until the September meeting.



Now, of all times, you want to make sure that no good papermaking fibre is permitted to go down the drain.

Is your Save-All system adequate and comprehensive?

Does it recover the stock at maximum net profit per pound?

A carefully planned, up-to-the-minute closed system is an absolute necessity under present conditions—and it quickly pays for itself.

Why not talk it over with the engineers that have laid out and installed more Save-All systems than all others combined. All you have to do is get in touch with *Bird Machine Company, South Walpole, Massachusetts.*

The BIRD SAVE-ALL

Container Testing Group Shuffles Its Personnel

E. A. Throckmorton, president of Container Testing Laboratories, Inc., has announced the following organization adjustments, following the retirement of Theodore J. Gross to join the Shipping Container Institute. Charles J. Zusi, vice-president, will be in charge of shipping container testing methods and policies at the three Laboratories, in addition to the management of the Chicago laboratory. He is a graduate of Cooper Union, and was active in the early work of the Laboratories, to which he returned in 1945. In the meantime, he was employed in a technical capacity by The Atlas Plywood Corporation and The Hinde and Dauch Paper Company of Canada, Ltd., of which he was Director of Research.

Alfred W. Hoffman has been appointed manager of the New York laboratory. Mr. Hoffman is a graduate of Columbia University and has been associated with the Laboratories since 1935, except for a period in the military service.

Arthur C. Gault will assume special responsibility for the quality control program sponsored by the Laboratories with fiber box manufacturers. Mr. Gault was educated at Syracuse University, and has had extensive experience in fiber box production and quality control at the Thames Board Mills, Ltd., London, and at the F. J. Kress Box Company, Pittsburgh.

G. A. Pitman, Vice President, will remain in charge of the San Francisco laboratory.

Mando Elects Holmer Assistant Treasurer

INTERNATIONAL FALLS, Minn.—Carl O. Holmer was elected assistant treasurer of the company at a meeting of the Board of Directors of Minnesota and Ontario Paper Company. Mr. Holmer is a native of Minneapolis and attended Minnehaha Academy and the University of Minnesota.

Mr. Holmer has been connected with Mando for more than twenty years and most recently was its insurance officer. He has been active in the Insurance Buyers Association of Minnesota, being one of its organizers and a past president.

Littman Heads Export Work Of Far East Paper Products

Michael Littman, for the past 14 years associated with Sharp Export Ltd., paper exporters, has established an export department for the East Coast Paper Products Corporation of 90 Butler Street, Brooklyn, N. Y. Upon resigning as secretary of Sharp Export, Mr. Littman has been named vice-president in charge of exports for the East Coast Company.

THEODORE J. GROSS
Heads Container Institute

Shipping Container Institute Names Theodore Gross

Theodore J. Gross has been appointed managing director of the Shipping Container Institute. Formerly president of the Container Testing Laboratories of New York and Chicago, he was affiliated with that organization for twelve years. He will make his headquarters at the Institute's offices at 475 Fifth Avenue.

The Shipping Container Institute was recently formed by a number of leading fiber box manufacturers to provide a technical information center and conduct fundamental research on fiber shipping containers. The Institute will coordinate laboratory analyses of various container materials and design with field studies of large scale experimental shipments.

Mr. Gross has pioneered in the application of test methods for all types of containers. A graduate of the University of Virginia, he is an active member of the container testing committees of both the American Society for Testing Materials and the Technical Association of the Pulp and Paper Industry.

Powell River Shortens Its Work-Week Schedule

VANCOUVER, B. C. — Due to the limited log supply, operations at the plant of the Powell River Company at Powell River, B. C., were placed on a five and two thirds day week as from June 10. The wood processing plant was placed on a schedule of three seven-hour shifts.

When the woodworkers strike first broke out in British Columbia operations were maintained on normal basis at the Powell River plant. However, a dispute arose over "hot logs" and as a result a 36-hour shut down occurred. The mill resumed operations on June 3 and then went on a restricted schedule one week later.

Container Raises Paepcke; Elects Dixon President

The Board of Directors of Container Corporation of America has elected Walter P. Paepcke, president, to the newly created office of chairman of the board and chief executive officer of the company. Wesley M. Dixon, vice-president, was elected to the office of president.

The former divisional responsibilities of Mr. Dixon have been divided between two of the corporation's vice-presidents; Mr. J. V. Spachner and I. C. Keller, in addition to their present divisional management duties.

At a meeting of the Board of Directors held today, a quarterly dividend of 50c per share and an extra dividend of 30c per share was declared to stockholders of record August 5, 1946, payable August 20, 1946.

Kimberly Mill Foremen Elect C. J. Bouressa

KIMBERLY, Wis.—C. J. Bouressa was reelected president of the Kimberly Mill Foremen's Club at a dinner meeting Monday evening, June 17, at the Kimberly clubhouse. Members made plans for the club picnic, to be held July 14 at Little Chute. After the dinner, C. H. Sage, vice president of Kimberly-Clark, and president of the Spruce Pulp and Power Company, Canada, spoke on the woodlands division and showed motion pictures.

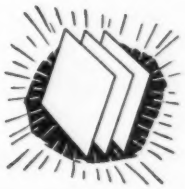
Guests at the dinner were M. J. Schulenberg, assistant to Cola Parker, K-C president; James McNutt, woodlands division; Lyle Argetsinter, woodlands division, and David MacDonald, who is being trained at Kimberly for a position as superintendent of planning and materials at Longlac, Canada.

Perkins Juniors Hold Open House for Friends

HOLYOKE, Mass.—Mr. and Mrs. Benjamin F. Perkins, Jr., held open house for some 200 relatives, neighbors and friends on the lawn of their home Saturday afternoon and evening. Mr. Perkins is associated with his father in the American Tissue Mills and B. F. Perkins & Sons, Inc., manufacturers of paper-making machinery. Mrs. Perkins is the former Virginia Blanchard of North Haven, Conn. The couple was married in New Haven November 10, 1945.

Prager Joins Unicraft As Its President

AMHERST, Mass.—George J. Prager, formerly of the paper finishing and converting division of Norwood Engineering Company, has taken over activities as president and general manager of Unicrafts, Incorporated. He has put into production the latest models of rotogravure printing equipment and embossing machines. He has also added to the line an advanced model of a high speed super calender.

With paper-making machinery operating on round-the-clock schedules your profit curve frequently is determined by your processing equipment. Here ARMCO Stainless Steels give you big manufacturing and selling advantages. Slime-producing bacteria have a tough time getting a toehold on the smooth surface of stainless steel. This means fewer "weak spots", less breakage. Less production time is lost in "clean-ups". There is no trouble from chemical reactions. Paper is cleaner and more uniform.  You get greater output with fewer units. And equipment made of ARMCO Stainless gives longer service. For complete information write your equipment fabricator, or get in touch with us direct. The American Rolling Mill Company, 3651 Curtis Street, Middletown, Ohio.

THE AMERICAN ROLLING MILL COMPANY

Special-Purpose Sheet Steels • Stainless Steel Sheets, Bars and Wire

STAINLESS ARMCO STEEL

International Plan Declared Effective

The Board of Directors of International Paper Company this week called for redemption at the opening of business August 27, 250,000 shares of cumulative convertible 5 percent preferred stock at 105 and accrued dividends. This is the third call of the 5 percent preferred stock and raises to 550,000 shares the total amount called thus far.

The exchange offer of June 5, 1946, became effective July 1 as more than 100,000 shares of the 5 percent preferred stock had been tendered for exchange before the close of business. The Board of Directors also extended until further notice the exchange offer in which the company offered 400,000 shares of its new senior cumulative $4 preferred stock and 100,000 shares of common stock in exchange for 400,000 shares of 5 percent preferred stock. Under this offer, for each share of 5 percent preferred stock accepted in exchange there will be issued one share of the new $4 preferred stock and one-quarter share of common stock.

This exchange offer has been made for voluntary acceptance of 5 percent preferred stockholders and does not supersede the existing right to convert each share of 5 percent preferred stock into 2½ shares of common stock. As a result, each holder of 5 percent preferred stock now has the choice of three options: (a) to tender his 5 percent preferred stock for exchange on the basis outlined above; or (b) to convert each share of his 5 percent preferred stock into 2½ shares of common stock; or (c) to continue to hold his 5 percent preferred stock with the continuing right to convert it into common stock, until redeemed.

Mead Retires $8,000,000 Outstanding Securities

The Mead Corporation securities offered June 28 represent the unexchanged shares of an issue of 70,000 of $100 par value preferred stock and of 101,056 shares of $50 par value second preferred, first offered to holders of the company's $6 and $5.50 dividend preferred stocks. The subscription warrants expired on Wednesday, June 26. Each share of the second preferred stock is convertible into two shares of common stock.

With this financing, and with the proceeds of $12,000,000 of twenty-year 3 per cent bonds sold earlier in the month, the company will retire $8,000,000 of its 3⅛ per cent bonds and outstanding issues of old preferred stock and cover expenses incurred in the company's investments in the Macon Kraft Company and improving manufacturing facilities in the company's Tennessee, Ohio and other plants.

Among underwriters associated with Drexel & Co. in the offering are Harriman, Ripley & Co., Inc.; Glore, Forgan & Co., and G. H. Walker & Co.

Unaudited figures for the March quarter indicate a consolidated net profit of $570,000, compared with $247,120 in the first quarter of 1945; net sales, $11,150,000 against $9,210,000.

National Gypsum Sales At Record High Mark

BUFFALO, N. Y.—With sales at the highest rate in the company's history, National Gypsum Company's earnings in the first five months of this year approximated 87 cents a share on the common stock, President Melvin H. Baker announced. This compared with 52 cents a share in the year 1945.

"Earnings are running at a rate of about 25 cents a share each month and sales at an annual rate of $33,000,000," Mr. Baker said. "Sales are about 15 percent ahead of last year even though at that time we were carrying $6,000,000 of Government contracts on the books."

Commenting on the company's postwar expansion, Mr. Baker said the total outlay for new plants, machinery and rehabilitation will total about $20,000,000 and construction work already under contract should be completed in about 12 months.

Barber-Ellis Earnings Rise Five Per Cent

TORONTO — Barber-Ellis of Canada, Ltd., for 1945 reports retainable net profits of $63,373, which, after preferred dividends, was equal to $1.34 a share on the common, compared with $60,042 or $1.27 a share for the previous year. Earnings for 1945, including $20,000 refundable portion of excess profits taxes, were equivalent to $1.80 a share, or moderately below $2.20 for 1944 when the refundable portion was more than double that of the latest year at $41,000. Decrease in operating income of $212,717, before taxes and bond interest, from $314,136 a year ago, was more than offset by a reduction of approximately $100,000 in income and excess profits taxes to $130,000 for 1945.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending June 29, 1946

STOCKS

	High	Low	Last
A. P. W.	8⅜	8⅛	8⅜
Armstrong Cork Co.	58¼	56½	58⅛
Celotex Corp.	34½	33⅝	34
Celotex Corp., pf.	22¾	21¾	21¾
Certain-Teed Products Corp.	25½	23¼	25
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	59¾	58	59¾
Champion Paper & Fibre Co., pf.	111½	110½	111½
Congoleum Nairn Co.	37⅛	35¼	36⅞
Container Corp. of America	53¼	49¼	53¼
Continental-Diamond Fibre Co.	14⅞	14¼	14¾
Crown-Zellerbach Co.	35	33¼	34⅜
Crown-Zellerbach Co., pf.	109¼	108½	108½
Dixie Cup Co.	49	46½	49
Dixie Cup Co.—A	59½	58	59½
Flintkote Co.	40	37⅜	39
Flintkote Co., pf.	113	113	113
Robert Gair	10¾	10⅛	10⅜
Robert Gair, pf.	20⅞	20⅜	20⅝
International Paper Co.	47⅝	44¾	47⅜
International Paper Co., pf.	118½	114	118½
Johns-Manville Corp.	152	147	150⅞
Johns-Manville Corp., pf.	137	135	137
Kimberly-Clark Corp.	67½	63½	67½
Mac Andrews & Forbes	41⅜	41⅛	41⅛
Mac Andrews & Forbes, pf.	....	....	....
Masonite Corp.	67	65½	65½
Mead Corp.	25	23¼	24¾
Mead Corp., pf. A—6%	106¼	105¾	106¼
Mead Corp., pf. B—5½%	106¼	105½	106¾
National Container Corp.	35	32½	35
Paraffine Companies, Inc.	85	82	85
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	29⅜	27	28⅛
Rayonier, Inc., pf.	38	37⅛	38
Ruberoid Co.	54¾	54	54
Scott Paper Co.	57	56	57
Scott Paper Co., pf.	110¾	110	110
Sutherland Paper Co.	45	42	45
Union Bag & Paper Corp.	37	32¼	37
United Paperboard Co.	13¾	13	13¼
U. S. Gypsum Co.	126	121	126
U. S. Gypsum Co., pf.	200½	200½	200½
West Virginia Pulp & Paper Co.	49¼	47½	48½
West Virginia Pulp & Paper Co., pf.	113	113	113

BONDS

	High	Low	Last
Abitibi Pulp & Paper Co. 5s '53	....	....	....
Celotex Corp. 3½s '55	....	....	....
Certain-Teed Products Corp. 5½s '53	....	....	....
Champion Paper & Fibre Co. 3s '65	104¾	104¾	104¾
International Paper Co. 5s '47	101¾	101⅛	101⅛
Mead Corp. 3½s '53	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending June 29, 1946

STOCKS

	High	Low	Last
Great Northern Paper Co.	41	39¾	40¾
Hummel-Ross Fibre Corp.	18	16⅝	18
St. Regis Paper Co.	14⅜	13¾	13⅞
St. Regis Paper Co., pf.	....	....	....
Taggart Corp.	10½	10½	10½

BONDS

	High	Low	Last
American Writing Paper Co. 6s '61	....	....	....

Some paper manufacturers are like the Red Queen in the story book—in their efforts to increase tonnage they run the machines at top speed but they lose more time by stops for adjustment of the felts than they gain by speeding up the wires.

The purpose of the wire clothing is to deposit the fibers uniformly from deckle to deckle. The felt must remove the water, full width of the sheet, as fast and as uniformly as the wire does its work. Otherwise the direct heat needed at the drier rolls must be increased to the danger point.

One of many reasons why experienced paper manufacturers prefer Hamilton Felts is because Hamilton Felts do their work uniformly and fast. When the sheet leaves a Hamilton Felt there are no wet spots left, to be ironed out—less heat is needed—cost of fuel is reduced. Hamilton Felts run *true* at all speeds—seldom require adjustment —reduce broke—increase tonnage.

From the thinnest tissue to the heaviest board there is a Hamilton Felt that will do your work better, faster and at lower cost.

SHULER & BENNINGHOFEN, HAMILTON OHIO

• Miami Woolen Mills •

Hamilton Felts

• Established 1858 •

American Expands Container Output

Work has started on a $4,500,000 expansion program, including new plant facilities at Maywood, Ill., and additions to equipment at four existing plants, intended to increase by 50 percent American Can Company's capacity for production of flat-top, reclosable quart fibre milk containers. Four plants now in operation at Brooklyn, Jersey City, San Francisco and Los Angeles made more than a billion fiber milk containers in the last year.

New machinery is now being built in the company's shops with installations planned to start at Brooklyn and Jersey City within the next 90 days. These plants, which supply the New York metropolitan area besides shipping containers to Chicago and the Middle West, will have a 15 per cent increase in quart container capacity by early 1947. Completion of installations at Maywood, where more than 70,000 square feet of floor space is being prepared, will add another 35 per cent to quart container output by the middle of 1946. The Maywood plant, located in close proximity to Chicago, and also serving Detroit, Grand Rapids, Indianapolis and other cities, will have the effect of releasing an increased quantity of containers for the New York area.

First additions to West Coast facilities will be made with installation of new line at San Francisco so that additions can be made to existing lines with no loss of weekly output. The program at San Francisco and Los Angeles will ultimately raise quart container output 50 per cent at these plants, it was declared. Work is under way on a $1,000,000 construction and equipment program for Los Angeles intended to double output there by late 1947.

American Paper Goods Moves Sales Offices to New York

KENSINGTON, Conn.—The American Paper Goods Company has moved its general sales office to New York City. This was done with the thought in mind of affording better service and greater convenience for customers as well as greater accessibility for company salesmen and representatives.

The executive offices will remain in Kensington and will continue to handle all matters concerning finance, delivery, purchasing and general policy from there. The new offices are located in Suite 2508 in the Chanin Building at 122 East 42nd Street. The telephone number is MUrray Hill 3-6496.

Lowe Mill Closes for Repairs

RIDGEFIELD, N. J.—The Lowe Paper Company mill will be closed for repairs during the weeks of July 27th through August 11th.

Wisconsin Reservoirs Gain, Now 71 Per Cent Full

WAUSAU, Wis. — Wisconsin river reservoirs gained 2,131,000,000 cubic feet of water during the week ended June 16, and then were filled to 71 percent of their capacity. On May 19 the reservoirs were at only 51 percent.

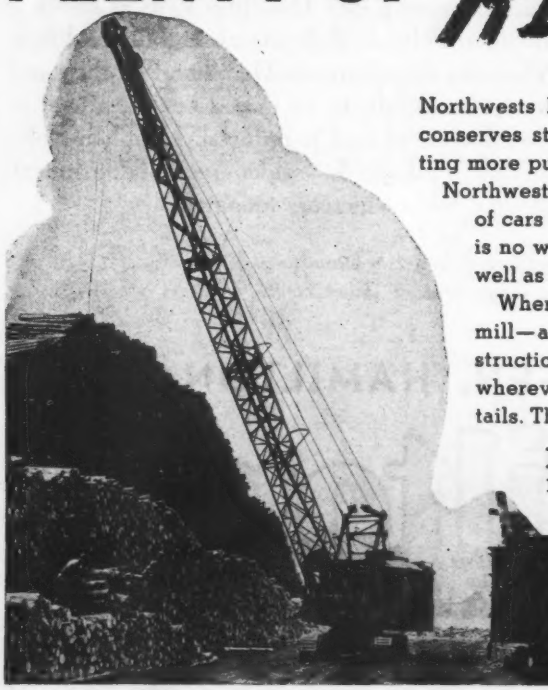
The Big Eau Pleine reservoir, with a total capacity of 4,551,000,000 cubic feet, held 3,089,000,000 cubic feet. Total storage June 16 in the reservoirs was 12,096,000,000 cubic feet, as compared to 16,214,000,000 on the same date in 1945.

Average precipitation during the week in the Wisconsin River basin, as measured at 32 stations above Wisconsin Rapids, was 1.71 inches, and the average evaporation for this period was 1.08 inches. Average precipitation for the period from January 1 to June 16, this year, was 10.74 inches, as compared to the 57-year average of 12.03 inches for the same period of the year in the river basin above Wisconsin Rapids.

Noble & Wood Takes a Vacation

HOOSICK FALLS, N. Y. — The Noble & Wood Machine Company plant will be closed during the two weeks, July 7th to 21st, for a general vacation and for the installation of new machinery. A skeleton crew will be on hand in both office and factory to take care of emergency orders.

PLENTY OF REACH HERE!



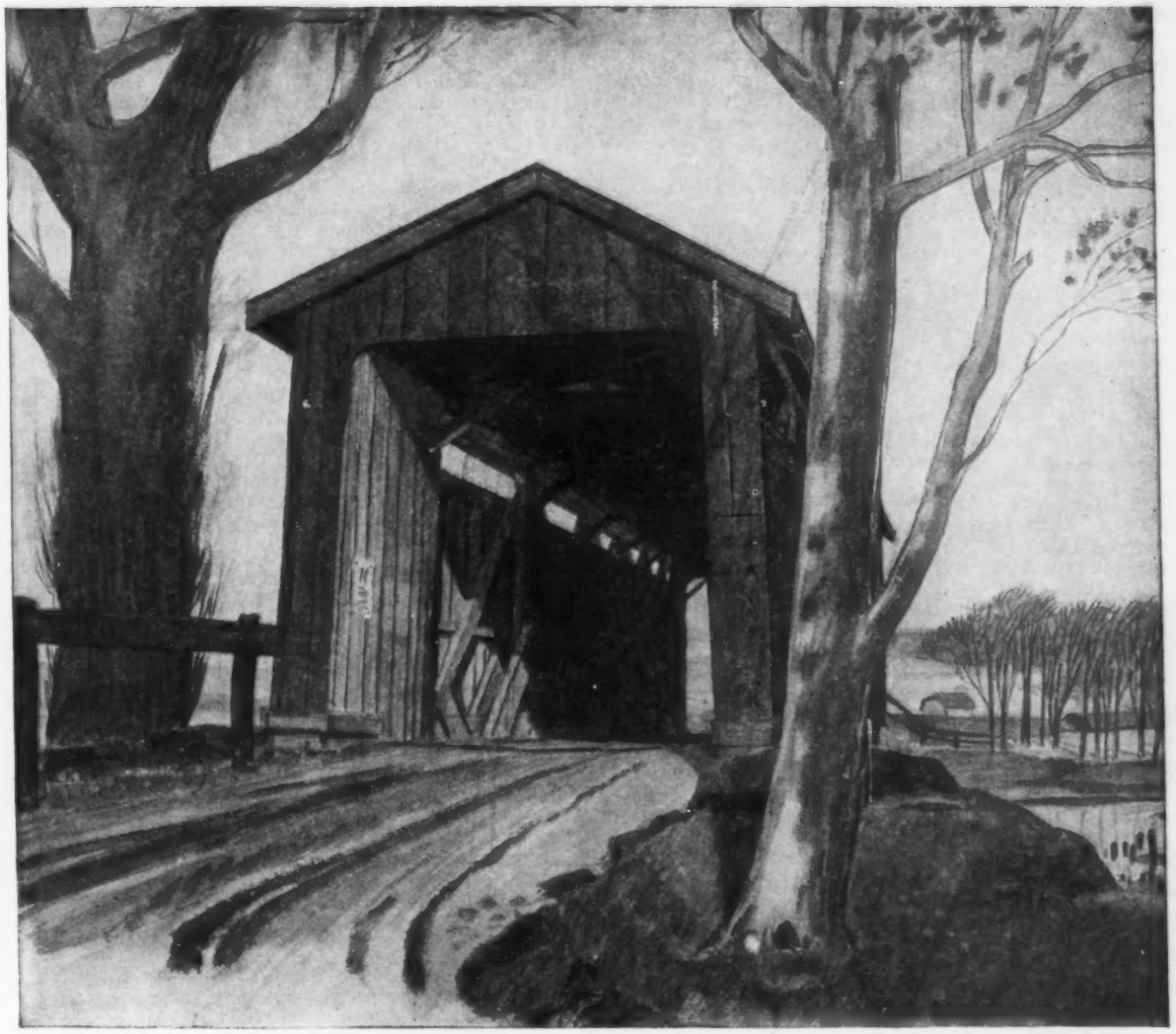
Northwests have the reach and capacity for the high piling that conserves storage area and shortens the haul to the plant, permitting more pulp close to the pond.

Northwests go anywhere and can maneuver up and down a line of cars unloading as it goes, without respotting the cars. There is no waste of storage space because it can pile behind it as well as alongside, covering more area than a locomotive crane.

When not handling pulp it is free for other jobs around the mill—at the power plant on coal and ashes, on repair and construction jobs, handling crates and rolls of finished goods—wherever there is material to lift or load. Ask for complete details. There is a size for every problem—4 to 44 tons capacity.

NORTHWEST ENGINEERING CO.
1815 Steger Bldg., 28 E. Jackson Blvd., Chicago 4, Ill.

NORTHWEST



Why did old bridges carry umbrellas?

The covered bridges that once dotted the highways of the country weren't built to protect the traveler . . . but the bridge itself. By shielding the trusses, decking and stringers from moisture—which permits the fungus growth that causes decay—the life of the bridge was extended.

Today there is the same necessity of protecting not only bridges, but all sorts of structures from the accelerated decay produced by moist conditions: building frames, roofs and walls in humid atmospheres; timbers and flooring laid at grade or subgrade; piling and piers.

Koppers pressure treatments are available that give lasting, proven protection against decay, termites and marine borers. Some resist acid attack, others confer fire-retardent properties. Our bulletin, "Economical and Permanent Construction with Pressure-Treated Wood" gives details. Ask for a complimentary copy. Wood Preserving Division, Koppers Company, Inc., Pittsburgh 19, Pa.

PRESSURE-TREATED WOOD

a KOPPERS Product

Tissue Workers Vote to Strike

HOLYOKE, Mass. — Employes of the Stony Brook and Pearl City divisions of the American Tissue Mills, locked in a month-old controversy with management over terms of a new contract, last week unanimously voted strike measures after their demands were labeled "hopeless in the eyes of company executives" by its negotiating committee from the Eagle Lodge of Papermakers.

The vote was taken during the course of a heated special session in Caledonia Hall which drew a capacity attendance. Andrew Beaton, lodge president, reviewed the three parleys held between the negotiating group and mill officials and concluded with the specific announcement that "in his opinion further conferences would not budge company executives."

Beaton disclosed that the decision reached would be forwarded to the National Labor Relations Board today under the terms of the Smith-Connally Act, and after the required 30-day cooling-off period if no favorable developments are registered, workers at the two plants will go on strike.

Beaton reported that "absolutely no attention" was paid to the statement released by Benjamin F. Perkins, company president, in which he decried "unfavorable publicity" and insisted that the company was acting more equitably toward its employes than any comparable industry. Beaton said it was "the same cry the management has been making for the last five years."

Reviewing the controversy, it was recalled that the union requested 12½ cents per hour increase and six holidays with pay as main issues. They were counteroffered eight cents per hour and three unworked days with full pay, which they termed "unsatisfactory."

Beaton expressed the hope that a government arbitrator might be able to iron out the impasse before the cooling-off period terminates.

Thilmany Film Is Shown To Tool Engineers

FOND DU LAC, Wis.—About 130 industrial executives from northeastern Wisconsin attended a banquet of Fond du Lac Chapter No. 45, American Society of Tool Engineers, at 6:30 Friday evening, June 14, at the American Legion clubhouse. One of the features of the program was the new colored motion picture, "Thilmany, Mill of Paper Magic," depicting operations of the Thilmany Pulp and Paper Company, Kaukauna, Wis. The picture was described by L. R. Graef of the Thilmany organization. Robert Breechlin, production superintendent of Valley Iron Works, Appleton, who is membership chairman of the chapter, was the banquet chairman.

Labor and Management Speak At Tri-State Convention

MILWAUKEE — Labor and management speakers met June 23 in a tri-state convention of the Paper Makers, Pulp and Sulphite Workers and Converters (AFL).

John P. Burke, Washington, international president of the union, said: "Our industry is learning to settle its labor-management problems around the conference table instead of on the industrial battlefield."

Charles W. Evert, president of the Downing Box Company, representing management, declared: "Your union is to be complimented on the fine spirit of cooperation shown in approaching the few points of difference which were settled when we renewed our labor contract a few weeks ago. Neither side had to wear brass knuckles. It is plain that your union is not out to kill the goose that lays the golden eggs."

Representatives were present from Wisconsin, Minnesota and Michigan.

Dalton Mills Stagger Vacation Shut-Downs

DALTON, Mass.—Dalton's two large paper mills have announced shutdown and vacation programs for the summer.

Crane & Company closed the stationery division last Saturday and kept it closed during the first week of July, while the employees of the mill took their vacations. The personnel working in the finishing room of the Bay State Mill vacationed at the same time. Various parts of the Pioneer Mill will be on staggered vacation from July 6 to Aug. 3. The week of Aug. 11 the Government Mill workers will have off and the Old Berkshire mill will be shut down for the week of Aug. 25. The remainder of the Bay State employees will vacation the first week of September when most of the mill is idle. Byron Weston company mill will close from July 1 to 13 for annual repairs and vacations.

Collins Staff Plans Annual Clambake

NORTH WILBRAHAM, Mass.—A general committee of the Collins A. A. and Collins union of Collins Manufacturing company, headed by Richard Avery, has been formed to plan for the third annual outing and clambake of company employees at Riverside Park on August 17. Others on the committee are Mrs. Kathleen Brown, treasurer; F. B. Reidy, secretary; Robert Foster, chairman sports committee; Paul May, chairman of prizes; James Sneddon, chairman of comedy routine events; Mrs. Andrew Rogerson and Mrs. Katherine Dyba, co-chairman of women's events; Charles J. Backus, tickets and softball; Ray Butler, transportation; Charles Rais, publicity and photography.

Blank Book Force Enjoys Reunion

HOLYOKE, Mass.—Veterans of World War II at Couture's Grove demonstrated that they had maintained their athletic prowess when both employers and employees turned out as the National Blank Book Company played host at a victory outing held in honor of the approximate hundred of the company's returned veterans. Games were followed by a dinner at which Andrew Mangum, general chairman, and members representing the management presented the ex-servicemen with chrome lighters. The assemblage stood silent for a moment in respect for the five servicemen from the company who lost their lives in the war. Those remembered were Pvt. Earl Wilson, Machinists Mate Third Class Harvey L. Wiley, Pvt. Raymond Waterfield, Staff Sgt. Leon Benoit and Lieut. William Edward Kane.

The outing was in charge of a committee consisting of Mangum, general chairman; Gordon Halket, treasurer; Anna O'Brien, secretary; Gene Dean, chairman of entertainment; Pete Gamache, chairman of program and tickets; Leo Hebert, chairman of transportation; and Edythe Forsander, first aid nurse.

All sporting events were run off in professional style by Gene Dean, Fran Fleming, Gordon Halket, Pete Dain and Bill Frese. The management was actively represented throughout the day by J. M. Towne, president; R. P. Towne, treasurer; R. M. Weiser, superintendent, and Alton Hughes, comptroller.

Wisconsin Safety Council Elects E. A. Page

TWO RIVERS, Wis.—E. A. Page of Kimberly-Clark Corporation, Neenah, was elected a vice-president of the Wisconsin Council of Saftey June 28 as 200 representatives of state industrial firms convened at Point Beach State Forest on June 28. F. W. Braun of Employers Mutual, Wausau, was elected president. Wisconsin-Michigan Power Company, Appleton, was awarded second place for improvement in accident frequency rate in 1945. Kimberly-Clark's mill at Niagara, Wis., also was cited for its record in outstanding improvement in safety during 1945.

Kimberly Staff Hears Safety Talk

KIMBERLY, Wis. — Highway safety was the topic at the third safety program given June 14 at the Kimberly clubhouse by workers at the Kimberly mill of Kimberly-Clark Corporation. Police Lieutenant Harry Salzman of Appleton was the speaker. The program was sponsored by the pulp department. Angus McIntyre and George Saunders were the chairmen.

in Hohokus

in Kokomo

That's why . . .

no single, undiscriminating approach to slime control is equally effective and economical at every mill. The method that works wonders in "Hohokus" may be unsuitable for "Kokomo"

W&T ENGINEERED SLIME ELIMINATION is individually adapted to the requirements of each mill, so as to destroy slime-forming organisms at the points where they can be most readily and permanently controlled.

For example, Break-Point Chlorination may be used for the fresh water supply, and chloramines and other chemicals employed to control microorganisms introduced through the stock and to prevent recontamination from air-borne organisms. Applications will be made at points in the system carefully chosen to avoid waste of materials.

Wallace & Tiernan Engineers can give you the benefit of the experience gained in treating slime in over 300 paper mills. Why not have them make a survey of your mill and recommend the slime-control procedure that best meets your individual needs? Wallace & Tiernan Company, Inc., Newark 1, New Jersey. Represented in Principal Cities.

WALLACE & TIERNAN

Engineered
SLIME
ELIMINATION

P-50

OPA Limits Ceiling Payments in Area

WASHINGTON, D. C.—Ceiling prices established for rough pulpwood produced in southern New York State and in north-central Pennsylvania may be paid only when not more than 10 percent of a delivery comprises pulpwood with a diameter less than six inches at the small end, the Office of Price Administration has ruled. This action, effective July 2, 1946, which is similar to a previous action on insulation and felt cordwood bolts, is designed to prevent undue diversion to pulpwood mills of small size wood normally used by chemical wood plants.

Owing to the current wood shortage, pulpwood mills have tended to accept smaller wood than usual, thus restricting the cordwood available for chemical plants. The ceiling prices for chemical wood are lower than those for pulpwood.

The southern New York State area affected comprises the counties of Chautauqua, Cattaraugus, Allegany, Steuben, Chemung, Tioga, Broome, Delaware, Sullivan, Orange and Rockland. The Pennsylvania area affected comprises the counties of Elk, Forest, McKean, Potter, Tioga, Warren, Jefferson, Lycoming and Wayne.

Two provisions formerly applying in the Pennsylvania area, that the pulpwood be sawn at both ends and be a full 52 inches long, are revoked. They have been found to be impracticable for all sellers.

NEPCO Develops New Refrigerator Paper

PORT EDWARDS, Wis.—Nekoosa - Edwards Paper Company technicians have developed a new product, Nepco Refrigerator Food paper, a convenient household container of paper especially designed for wrapping foods to be quick frozen and stored in home freezers. The rolls are available in 18 by 20-inch cutter boxes containing 125 feet of paper. Also available is a 24-inch roll, 250 feet long.

Nepco is planning to expand production facilities on the new paper in order to meet the needs and demands of home and farm freezers. Facilities are being readied for the production of other household papers which will be introduced from time to time.

Nepco Refrigerator Food paper is being accepted as a solution to problems of freezer burn, flavor loss and dehydration of frozen foods. Development work began several years before the war and has advanced to meet the demand for household size rolls of moisture-proof, vapor-proof wrapping paper.

Morris Helps the Customers Keeps Tabs on Direct Mail

Published for the special use of users and producers of direct mail advertising by the customers service department of Reinhold Gould, Inc., the first issue of "Keeping Tabs on Direct Mail" has created quite a stir hereabouts. To date the publication has been featured in the lead article in "The Reporter of Direct Mail Advertising," and is being given added prominence by articles in "Time," "Tide" and "Business Week."

Under the capable guidance of C. V. Morris, Director of Trade Relations for Reinhold Gould, the new service consists of monthly reports on up-to-the minute direct mail advertising techniques and trends, design and production data, performance and effectiveness. In describing the direct mail programs of a number of large companies, the first issue of the publication adds the following pertinent bit of advice: "The follow-up programs of these companies whose names and products have so deeply registered with consumers may seem to be expensive promotion efforts, but it is the general opinion of the top executives of all the companies mentioned, that it is not nearly so expensive as not answering inquiries or not answering them properly."

KALAMAZOO TANK & SILO CO., Kalamazoo, Michigan

They're Lovely...

A few of the thousands of products that can be made from GEON raw materials

Boldly but beautifully colored shower and window curtains... a delicately shaded shower cap... baby's modern spotproof bib and mother's gay apron... sister's stylish raincape...

All these were fabricated from flexible films made from GEON raw materials. But they're only a handful of the thousands of exciting new products that can be made from GEON. For versatile GEON may be pressure or injection molded, extruded, calendered, cast into sheets or film, or applied as coatings to all types of textiles and papers.

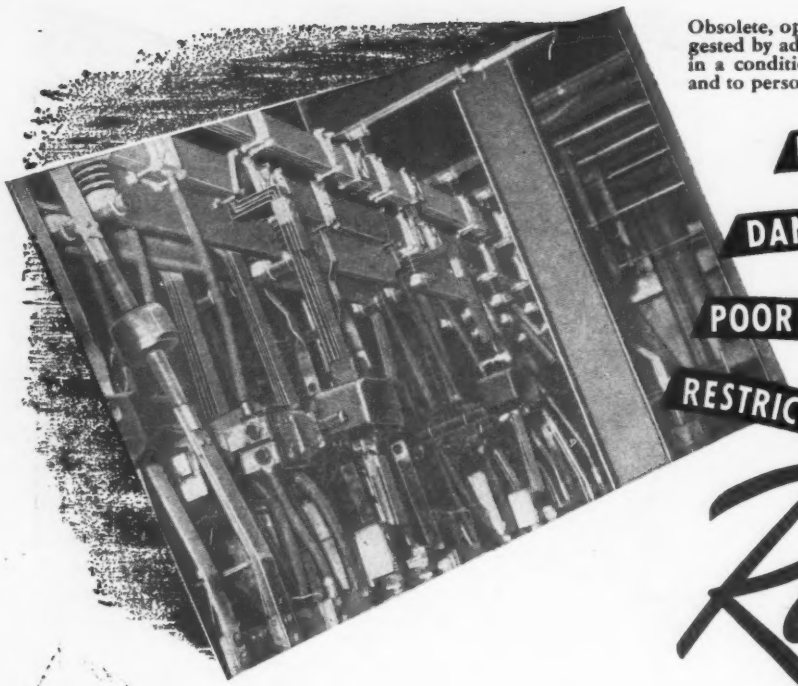
And products made from GEON may have any number of unusual properties in a wide variety of combinations. For example, products made from GEON may be made resistant to water, oils, acids, foods, air, heat, cold, abrasion, mildew, cracking, creasing, and many other normally destructive factors. They may be brilliantly or delicately colored; flexible or rigid; transparent or opaque. There are applications for GEON in literally *every* home, *every* industry.

For more information about GEON please write B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.

Geon
Polyvinyl Materials

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F. GOODRICH COMPANY



Obsolete, open-type switchboard construction, congested by additions made from time to time, resulted in a condition dangerous to operating continuity and to personnel.

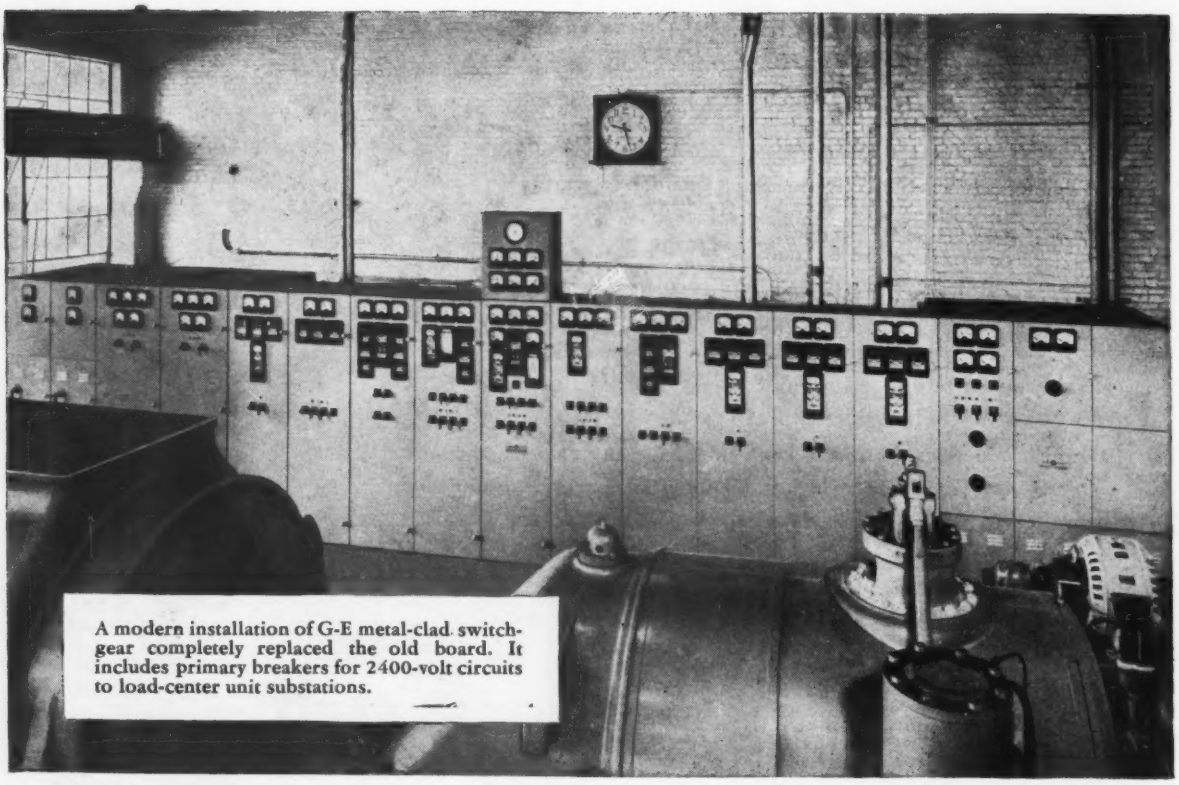
FREQUENT OUTAGES

DANGER TO PERSONNEL

POOR VOLTAGE CONDITIONS

RESTRICTIONS ON GROWTH

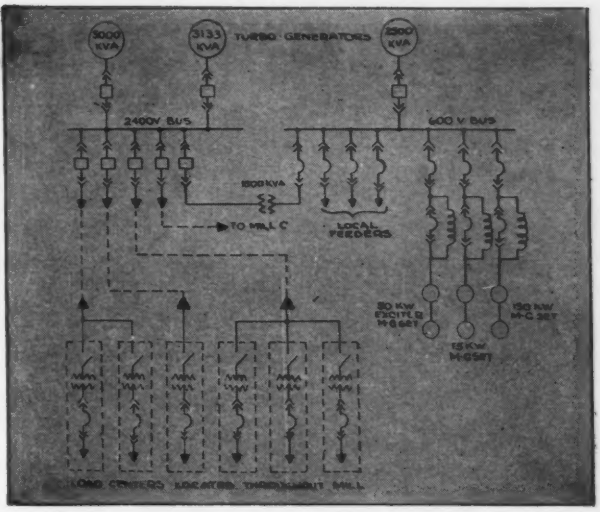
Removed



A modern installation of G-E metal-clad switchgear completely replaced the old board. It includes primary breakers for 2400-volt circuits to load-center unit substations.

GENERAL ELECTRIC

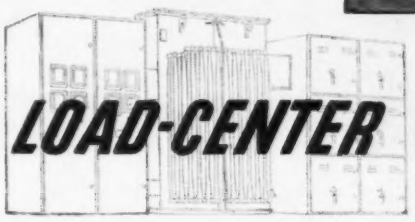
321-45-5000



Switchgear and Load-center Unit Substations are Shown in this One-line Diagram.

Originally, the 5000-kva generator was wound for 600 volts, and all but one circuit (to mill C) was powered from the 600-volt bus. The change to 2400-volt distribution brings short-circuit amperes to a value consistent with moderate-sized circuit breakers.

...BY G-E LOAD-CENTER UNIT SUBSTATIONS

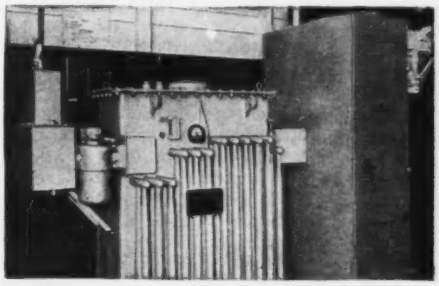


• An old, inadequate plant power system was an open invitation to trouble at this mill. Electrical outages were delaying production. Circuits and switchgear which had been added piecemeal added to the danger of inadequate interrupting capacity. In spite of large secondary feeders, the distribution of 10,000 kva at 600 volts had created unsatisfactory voltage conditions.

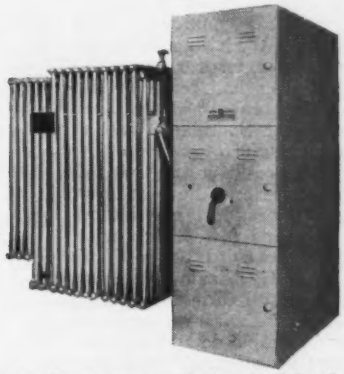
Analysis showed that further patchwork would be a costly practice. A new power distribution system, based on the use of G-E unit substations, was planned with the help of G-E engineers.

Now primary distribution is made at 2400 volts over cable that keeps voltage drop down, though it's modest in size. The powerhouse switchgear is all G-E metal-clad, equipped with magne-blast oil-less air circuit breakers. At load-center locations throughout the plant, six unit substations are installed, to step down from 2400 volts to 600. Individual circuits are fully protected by convenient metal-enclosed drawout air circuit breakers that are an integral part of the unit substation.

This new protection against outages and obsolescence is already justifying itself in power continuity and lowered costs. Why not determine, without obligation, if power-system replacement could do as much for you? Just call your local G-E representative. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

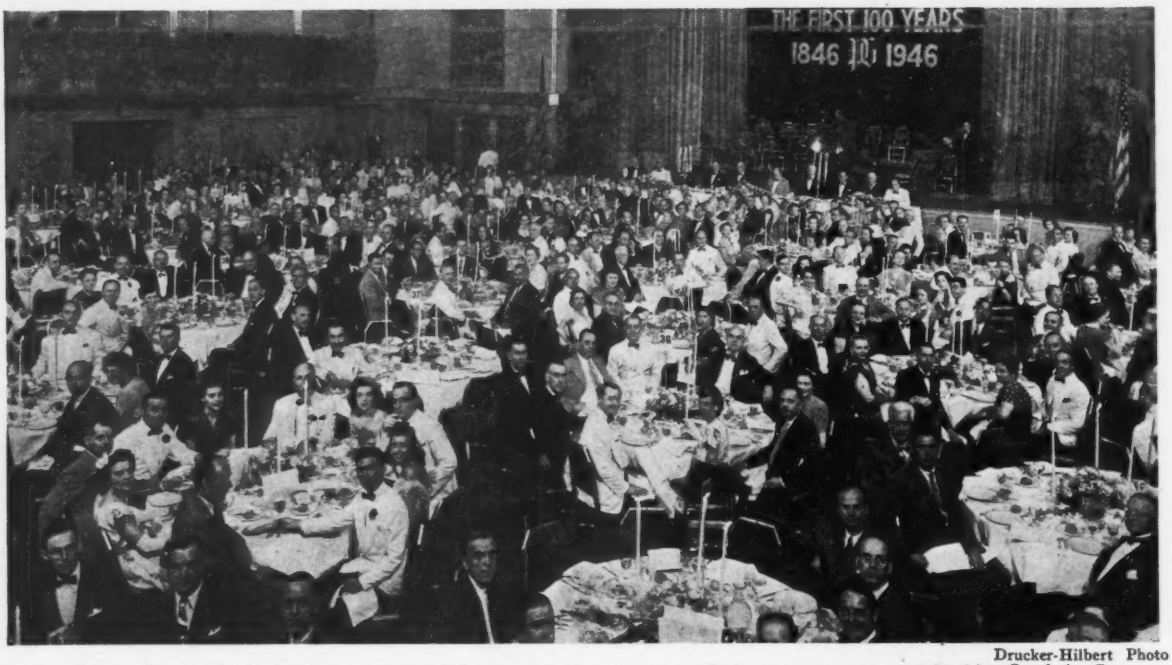


Typical load-center unit substation, as installed at locations which permit short low-voltage feeders to points of power use.



Another load-center unit installed in the mill, stepping 500-kva down from 2400 volts to 600. Draw-out air circuit breakers are co-ordinated with substation size to give full short-circuit protection without excess breaker size. Substation transformers use Pyranol non-inflammable insulating liquid.

LOAD-CENTER POWER DISTRIBUTION UNITS



Drucker-Hilbert Photo

Friends and associates of Louis Calder dine at the Waldorf-Astoria to honor hundred-year anniversary of Perkins-Goodwin Company

TOAST ANNIVERSARY OF PERKINS-GOODWIN

(Continued from page 11)

ive list of tributes was marshalled for the host who also was guest of honor. Reuben Robertson, president of the American Paper and Pulp Association, executive vice-president of Champion Paper and Fibre, led the list. L. Nylander, consul-general of Sweden, spoke on behalf of Swedish pulp producers. Richard W. Wortham, Jr., vice president of the Southland Paper Mills, read a message that had been prepared by Ernest L. Kurth, president of the company. Mr. Kurth was at the guest table, but prevented from delivering his talk by a throat condition. This speaker, and John W. Ewing, southern newspaper publisher, stressed the service that Mr. Calder had rendered the South through his energy and skill in bringing the great Southland mill at Lufkin into successful operation.

Roy Ferguson, president of St. Regis, added his own tribute to the soundness of the Calder operations. Charles A. Gordon, director and former executive vice-president of Oxford Paper Company, and George C. Winslow, director of sales for the E. B. Eddy Company, Hull, P. Q., added their own versions of respect and genuine delight in their experience and acquaintance with Mr. Calder. The speaking program was closed by Mr. Calder himself, in a generous tribute to his staff, his associates, and to the cooperative spirit he had found among those with whom he has done business.

Mr. Calder has edited a book titled The First Hundred Years, for his business associates and friends of Perkins-Goodwin. This book tells in detail the history of Perkins-Goodwin and its close relationship to the history of the pulp and paper industry.

Perkins-Goodwin paper department has had the privilege of supplying the paper requirements of many leading publishers, some of them for well over fifty years. Perkins-Goodwin has played an important part in the development of present-day packaging and has made a substantial contribution to the development of these paper specialties.

Today Perkins-Goodwin represents, as selling agent, more mills both here and abroad, and is stronger in every respect, than at any time in its history.

Perkins-Goodwin has its main office in New York City, and branch offices at Chicago, Lufkin, Texas, and Stockholm, Sweden. Working from these offices, its experienced staff of specialists keeps in constant touch with all important developments in pulp and paper making and marketing wherever they may appear.

The officers and directors of Perkins-Goodwin Co. are: Louis Calder, president; Albert Newcombe, vice president; Wm. H. Donaldson, secretary and treasurer; S. G. Blankinship, vice president; David I. Edwards, assistant secretary; V. B. Friedel, acting treasurer.

CPA Closes Printing Branch

WASHINGTON, D.C. — The resignation of James Hale Steinman, Director of the Printing and Publishing Branch, was received last week by John D. Small, Civilian Production Administrator. The Printing and Publishing Branch was dissolved on June 30.

Bulkley, Dunton Prepares New Display Catalogue

A new fall-winter display folio published by Bulkley, Dunton, 295 Madison Avenue, New York, just off the press, features twenty different display materials in dimensions most suitable for the majority of windows and other store-wide uses. All materials are available in an extensive range of colors and color combinations. There are many new ideas for backgrounds, showcases, panels, props, columns, signs, banners, trays and scrolls.

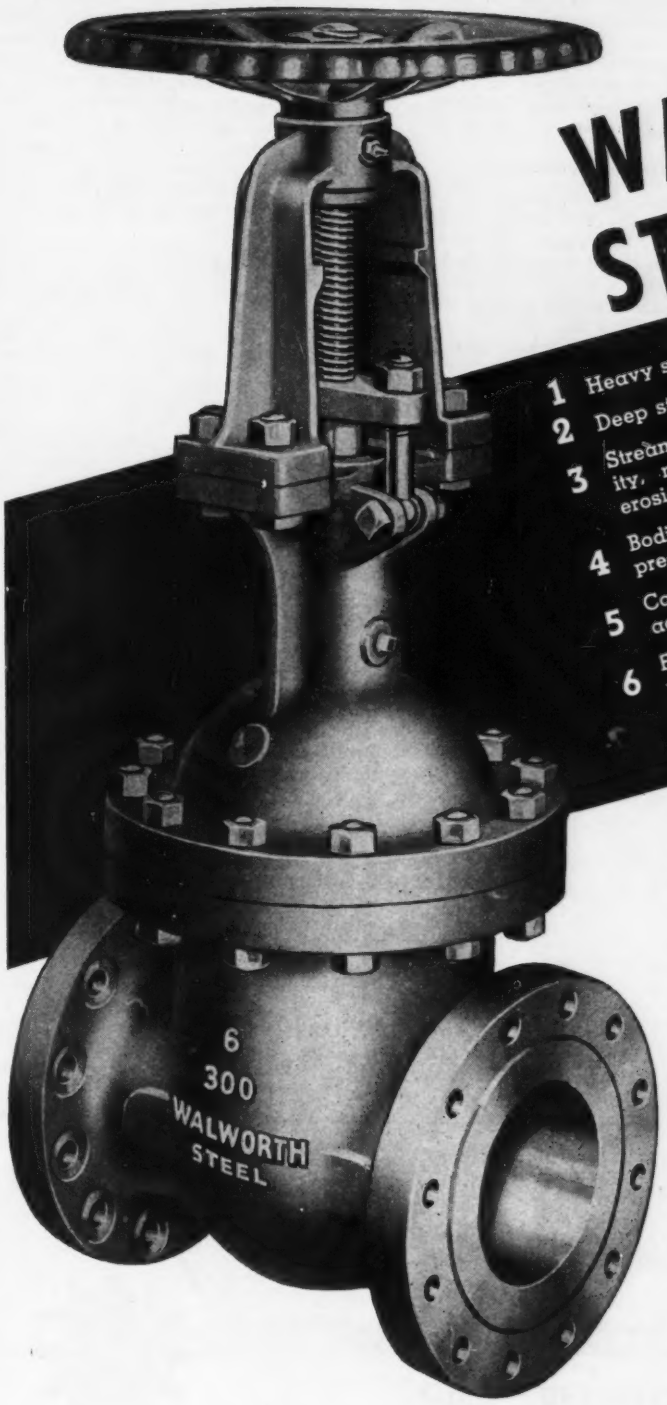
With aluminum foil back in civilian production again, Bulkley, Dunton is offering several materials of plain, laminated, embossed and colored foil, some in striking combinations with soft, velvety textures.

The center spread of the catalogue is devoted to Bulkton Seamless, one of the most versatile and most widely-used, all purpose display materials. The two widths, 85 and 107 inches of Bulkton Seamless are emphasized, as are the latest style colors of this easy-to-work-with material. Photographs of windows showing some of the innumerable applications of Bulkley, Dunton display materials as actually used by leading stores are also included in the catalogue.

Gypsum Staff Enjoys Outing

BUFFALO, N.Y. — National Gypsum Company held an employes picnic and dinner at the Automobile Club of Buffalo June 27. Melvin H. Baker, company president, presented wrist watches to veteran employes with twenty years of service.

You get all these BIG features in WALWORTH STEEL VALVES



1. Heavy steel walls for extra strength and protection.
2. Deep stuffing boxes to eliminate costly leaks.
3. Streamlined ports to make possible a high velocity, non-turbulent flow, and reduces possible erosion.
4. Bodies and bonnets engineered to withstand pressure and minimize distortion.
5. Cast body guide rib faces, machined to insure accurate disc centering.
6. Exact design, metallurgy and construction of yoke nuts, bonnet bushings, gland followers, handwheels and other vital parts to assure better service for a longer period of time.

Is there any wonder that out in the field, where approval is based on performance under actual operating conditions, industry has put its O.K. on Walworth Steel Valves?

Tough . . . wear resistant . . . dependable, these valves are produced in gate and globe types, in sizes to cover practically every service requirement. They are excellent examples of Walworth leadership . . . leadership that has made the Walworth valves famous throughout the world.

Walworth Catalog 42 gives complete information regarding Steel Valves as well as the full line of Walworth valves and fittings in bronze and iron. Your copy may be obtained upon request. Whenever you need valves — whether steel, bronze or iron — remember Walworth for dependability, economy, and long service life.

WALWORTH
valves and fittings
60 EAST 42nd ST., NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

Edward Reed Dies: Was Ill a Week

DALTON, Mass. — Edward O. Reed, for 16 years technical director of Crane & Company, died suddenly from a heart attack last week at House of Mercy hospital, Pittsfield, where he had been for a week under observation.

He was born in Washington, D. C., on September 8, 1883, the son of the late Oliver Hastings Reed and Ellen G. Reed. He was graduated with the degree of B.S. in chemistry from George Washington University in 1908.

He was employed by the United States government in the Bureau of Chemistry, Department of Agriculture, in 1908, and from 1916 to 1922 he was associated with Dr. C. P. Veitch in the leather and paper laboratory and in charge of paper investigations. In 1922 he joined the Government Printing Office as chief of tests until August 1927, and thereafter until 1929 he was technical director. He established the first technical laboratory in the Government Printing Office, which was also the first laboratory in the country devoted entirely to research for the printing industry.

Under Reed's direction, standard specifications for quality were developed for many materials used by the printing industry of great value, not only to the government but to the printing, bookbinding and allied industries. He was the author of numerous articles on methods of paper testing, investigations of paper qualities, efforts of relative humidity on paper, importance of standard testing conditions for testing paper, type metal alloys, adhesives and glues for the printing industry and the value of research and technical control in the printing and bookbinding industries.

He joined Crane & Company in 1929 as technical director. He built the technical section from a small laboratory in one of the mills to a comparatively large organization, consisting of a main laboratory where research and control work is carried on, as well as smaller branch laboratories in each of the mills.

Reed has been active in the Technical Association of the Pulp and Paper industry since 1915. He was a member of the association testing division from 1930 to 1933; a member of the executive committee from 1933 to 1936 and was currently serving as a member of the Standards Committee. He was also chairman of the committee on instrumentation research of the American Paper and Pulp Association.

He is survived by his widow, Grace N. Reed, and two children, Edna O. Reed of Philadelphia, and Nelson G. Reed of Milwaukee.

Robert Alexander Ramage

HOLYOKE, Mass.—Robert Alexander Ramage, a former well known paper manufacturer and retired president of the Franklin Paper company, died Saturday afternoon in the Holyoke hospital after an illness of several weeks. He was 67 years old.

Mr. Ramage's family has been identified with the paper industry for generations. His father served as treasurer and president of the Franklin Paper company concern and was also an official of the James Ramage company of Monroe Bridge. Mr. Ramage was the son of James Ramage and Adelaide E. (Risley) Ramage. Born in this city May 5, 1879, he received his early education in the local school and later attended and graduated from Cornwell preparatory school in New York in 1897.

Directly after completing his schooling he entered his father's firm as a billing clerk and rose through the various departments of the business becoming president of the concern in 1930. He retired in 1937. On June 14, 1910, he married Sara Cone Hellett, a native of Spencer and the daughter of Alfred and Frances Hellett. She died several years ago.

He is survived by one son, Robert A. Ramage, Jr., of this city; one brother, Theodore R. Ramage of Springfield; two sisters, Mrs. George C. Watson of this city and Miss Adelaide Ramage of Northampton, and one grandson.

George Dionne

TURNERS FALLS, Mass. — George O. Dionne, 50, an employee of the Esleeck Mill, died here on June 25.

Marathon Assigns Territories In Its Jobber Division

MENASHA, Wis.—Several recent appointments and territory assignments by Marathon Corporation, assign Carl F. Franzen to the newly-created position of promotional manager for locker packaging and stock board products. He will act as field promotional man for such items as round cans, pails, dishes, locker packages, Tite, Freeztex and Floratape. Mr. Franzen has been supervisor of the inside sales department in the home office for several years. William Walton, who was inside sales supervisor prior to entering service, has returned to his former position.

Four former sales representatives of the Jobber Division have completed their services in the armed forces and have been re-assigned to sales territories. W. F. Bittel has taken over the New Jersey territory with headquarters at Westwood. The upper Pennsylvania territory is being serviced by Sidney Salomon, who is presently located at Newark, N. J. Bob Smith has returned to his southern territory, covering Florida, Georgia and part of Alabama, with headquarters at Atlanta. Jack Thomsen is back in his Tennessee territory and is making his home in Gatlinburg.

Quayle Plans Big Things For Kimberly Golf Party

NEENAH, Wis.—Elmer Quayle, who has been appointed general chairman of the Kimberly-Clark Golf jamboree July 13 at Ridgeway Golf Club by Robert Lloyd, KCA sports coordinator, has named committees for the event. On the day's schedule is a dinner, which will be served country style beginning at 4:30. Refreshment stands will be set up on the course.

All Kimberly-Clark golfers must qualify for the tournament to be started the following week by playing in the jamboree rounds. Players will make up their own foursomes but tickets must be secured by July 11.

The jamboree includes men employes of the Kimberly, Atlas, main office, Lakeview and Badger-Globe mills of the corporation.

E. de Vries Company

EDVECO

PAPER EXPORTERS

ALL OVER THE WORLD

EDVECO

220 E. 42nd Street

New York 17, N. Y.

FOR SALE

PAPER MILL PROPERTY WITH HYDRO-ELECTRIC POWER

AT HERKIMER, NEW YORK

Process Steam and Water; Railroad Siding; Partially Utilized by Packing Products (molded pulp) Business.

9 ADVANTAGES

- **LOCATION.** In the Mohawk Valley, 80 miles west of Albany, 220 miles from New York City. On the main line of the New York Central R.R.
- **BUILDINGS.** Comprising in area 75,000 sq. ft. All are sprinkled. Low fire insurance. Practically all equipped with heating coils or unit heaters. Buildings now idle originally built for two paper machines and beaters.
- **EQUIPMENT** consists of machinery for the manufacture of molded pulp packing articles including egg cartons, radio tube pads, etc.
- **PROFITABLE BUSINESS** which has run at near capacity for many years. Sale price includes all land, buildings, water power rights, equipment, good will and all trade marks, patents, licenses and radio contracts necessary to the operation of the molded pulp plant.
- **POWER.** Concrete dam with head at mill of 20′. 42″ S. Morgan Smith Twin Turbine Water Wheel — a 375 KW Wood System 550 Volt 60 cycle AC generator develops app. 500 HP. Enough water available for another 500 HP.
- **STEAM.** Two 150 HP Babcock and Wilcox water tube boilers rated for 125 lbs. and a brick chimney and hood, app. 125′ high.
- **SPUR TRACKS** of the New York Central Railroad adjoin the buildings.
- **WATER.** Process water available with a 12″ supply line from canal into mill.
- **LABOR.** Adequate supply of skilled and unskilled, both male and female. Labor relations are of the best.

WRITE FOR COMPLETE FOLDER

HERKIMER PROPERTIES, Inc.

c/o Morley Co., Portsmouth, N.H.

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

W. L. Cook, Editor

OPA Passing

With price controls abruptly removed through expiration of life of their enforcement agency; with Congress early in the week none too clear about the possibility or the method of reinstating some sort of control over price levels; with OPA wiped out but with OPA staffs told to report for work, industry faced a week in which a muddling mixture of economic pressures and partisan politics continued to work for uncertainty. Inquiry in a few usually well-informed quarters early this week produced only a decided impression that the pulp and paper industry is by no means disposed to run away wildly with its freedom from price limitations; that it will have to make certain adjustments, some of which it would have had to face with OPA-approved sanctions after rises in wage scale and in some materials costs have been figured into the burden of doing business. On the other hand many a question brought the statement "We were going to call you later in the week to see what has happened."

It is entirely likely that business in general and the pulp and paper industry in particular will proceed in an orderly manner and that any rise in prices will reflect simply an honest rise in values based on costs. Where there is a heavy demand some elements of the boom-period sellers' market type of dealing cannot be eliminated, but the paper industry is an old industry and those who guide the destinies of its influential units have memories keen enough to recall the effects of former saturations of the market. For such as these any inventory that is based on inflated values is dangerous to have around the warehouse. To that extent common prudence will dictate that paper men will avoid meticulously any attempt to crowd the traffic.

Actually, some declare, there is a possibility of a more honest type of business under a condition of free enterprise. Always the loser may have complaint when a stranger has outbid him, but the market is now free of such complications as may be caused by "rulings" that are made arbitrarily and sometimes unwisely by those whose only claim to authority is based on a title conferred by reason of the desk that the promulgator occupies in some government bureau.

There can be no doubt that many good things can be attributed to the theory of price control. Most of them are based on the added fact that control of costs was a factor in holding the price line fairly level. But no one who has paid ten dollars for a four-dollar shirt recently can have any great amount of faith in claims of all-inclusive effectiveness; particularly when the subterfuges which made that high price thoroughly "legal" are so well known. It was only necessary for a new manufacturer to start making shirts for him to be allowed to charge more for his product than could be charged by the old manufacturer who was tied to a price at which he had sold that shirt based on 1941 costs.

In one of its last pronouncements late last week the OPA had recognized and attempted to regulate a familiar type of cost anomaly. It had forbidden anyone in an eastern area to buy at ceiling price levels for pulpwood any quantity of wood in which more than ten per cent was under a certain minimum diameter. For trees of lesser diameter, it seems, a lower ceiling was set because these were classified as for another industry. It must be recognized that the other industry, in this case, could blame the pulp mills for its shortage, just as the paper manufacturer recently found himself short of casein because a more profitable market existed elsewhere for milk solids.

It was this multiplication of confusions that cost the OPA the prestige and even the respect to which it might have laid claim. Its further insistence on "holding the line," a good mouth-filling phrase, failed to carry conviction when other government agencies, without protest from those who should have known that costs must be reflected in prices, at first established and then recognized that substantial hikes in pay scales were to be granted, though not until great industries had been tied up in knots and halted for long periods. Though its own labor relations have been kept on a particularly friendly and cooperative base through the period of industrial unrest, interruptions in steel, in coal and in transportation at times have laid their influence heavy on the paper mills, in high costs of purchases, and higher costs of idleness.

In an autocratic effort to be arbitrary it was easy for OPA to ignore the fact that values are based mainly on costs and supply and demand. Legitimate values actually have gone far beyond the price tag in almost everything since people began to think of Peace again, and it was the unpleasant task of OPA to make us forget this fact. The price at which goods are sold is not created at the time of sale but at some time long before that; just as the merchant or the manufacturer really loses his money at the moment when his inventory shrinks in value, not at a later time

Calendar of Coming Events

September 26-28, 1946—TAPPI General Fall Meeting, Hotel Statler, Detroit, Mich.

October 2-4, 1946—TAPPI Engineering Conference, Pfister Hotel, Milwaukee, Wis.

November 4-6, 1946—National Paper Trade Association. Fall Convention, Palmer House, Chicago, Ill.

when he sells at reduced prices and turns his shrunken values into cash.

Inflation, as it has been explained, is a state where there is a greater demand for goods and more money to pay for them than is matched by the available stocks in hand and the rate of production. To that degree a state of inflation has existed for a considerable period; the price tags at which materials are offered are but a reflection of a condition which has been caused by other factors. Those other factors need not be listed here—the list might be a long one, but each can identify some of them for himself. The simple truth is that OPA in itself and in its methods is not so much a corrective of inflation as an attempt to ignore it, and thus seemingly avoid its consequences.

The suggestion has been advanced that some brief continuation of the OPA be authorized while a new program is being developed with some speculative chance of pleasing the president and at the same time of being workable so far as manufacturing processes is concerned. As a holiday approaches it is not quite clear just what is ahead, and what such a new program might entail, even if the first hurdle of a temporary continuation could be agreed upon by the House and the Senate. The prospect is far from glamorous so long as the honest efforts of a legislative assembly to include controls over the controlling agency are singled out for objection by those who want all or nothing, and are made the subject of a highly personalized attack by the President of the United States.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1946		Corresponding Weeks—1945	
May 18	98.3	May 19	92.5
May 25	99.2	May 26	92.0
June 1	96.3	June 2	87.9
June 8	104.0	June 9	92.8
June 15	104.0	June 16	91.5
June 22	*106.2*	June 23	90.4

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1945	86.7	89.4	90.2	88.1	89.8	91.2	80.8	88.6	90.2	95.9	95.5	91.0	89.7
1946	94.7	98.4	104.4	102.7	*100.7*								

COMPARATIVE YEARLY SUMMARIES

	1939	1940	1941	1942	1943	1944	1945	1946
Year to Date	79.5	87.0	93.5	99.1	88.8	88.6	88.9	*100.4*
Year Average	83.4	85.6	97.4	90.4	87.8	88.1	89.7	

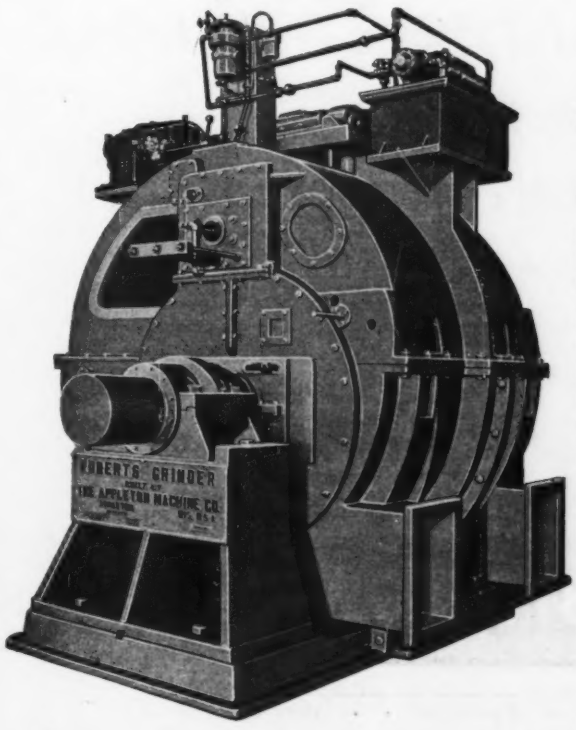
PAPERBOARD OPERATING RATIOS†

Current Weeks—1946		Corresponding Weeks—1945	
May 18	92	May 18	97
May 25	93	May 26	97
June 1	85	June 2	93
June 8	96	June 9	97
June 15	98	June 16	96
June 22	*97*	June 23	96

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1945	91	95	97	97	96	96	86	90	91	97	95	85	93
1946	90	97	100	99	*94*								

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.



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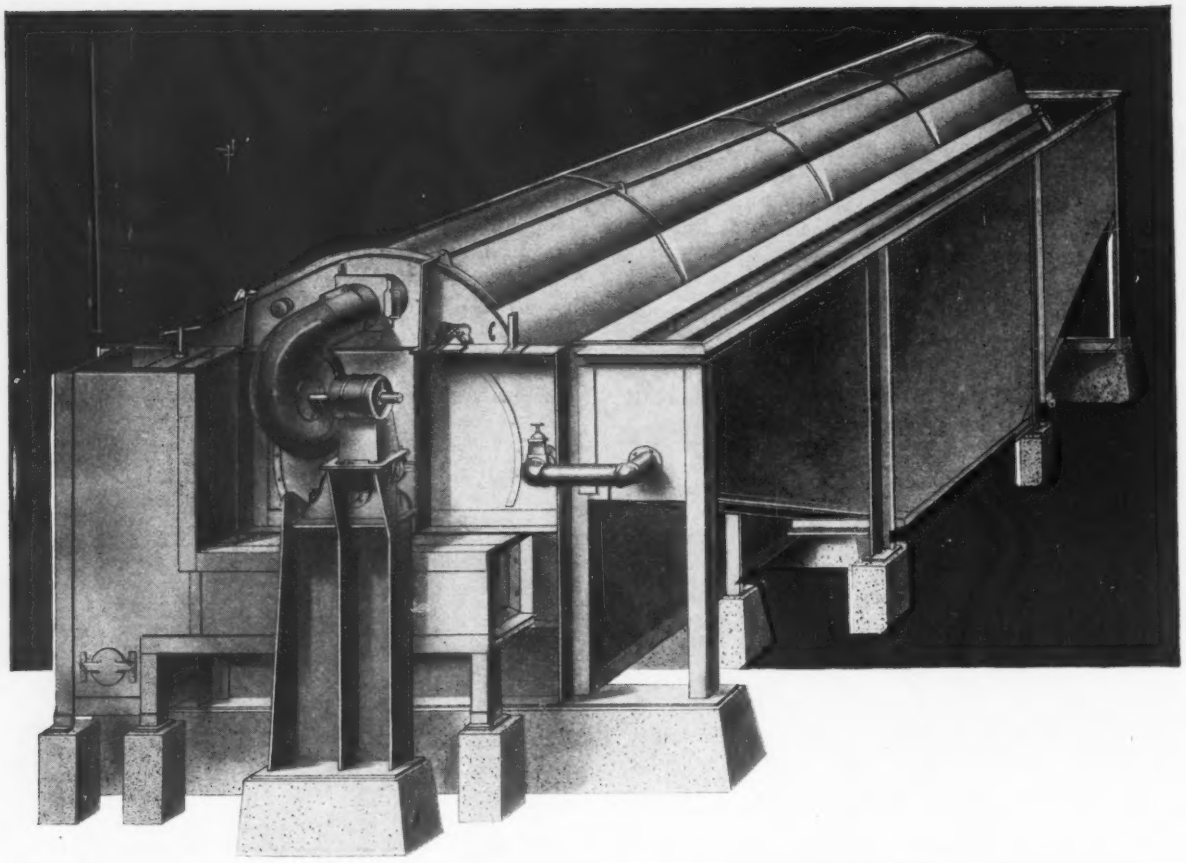

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122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Future Trends in Requirements by Users of Printing*

By W. C. Huebner[1]

Abstract

A brief description is given of the conventional printing processes: relief, gravure, and offset, in which pressure is required to transfer the ink from the printing surface to the paper.

No pressure is required when the electronographic press is used since ink transfer is accomplished by means of static electricity. The control of static electricity and the action of the press are given in brief.

Paper is one of the basic materials upon which civilization rests. When thoughts are expressed in print, when facts are recorded, when permanent images present what the human eye sees, paper is the convenient material for such records — ready for instant reference. The spoken word of radio, the projected images of motion pictures or of television, are soon forgotten. Their means for reproduction are not available to all for instant repeated use. The printed record alone provides instantaneous and convenient reference for the mass of humans who are able to read to obtain information, to recheck that information for truthful and accurate interpretation. Printing is the yardstick of service and reference usefulness for any conceivable means of communication.

In serving the needs of mankind, paper and printing will increase and improve its service regardless of any other means for conveying thoughts and information, by images and texts. When the great illiterate masses of all races learn to read and think, printing will be the practical means for indispensable service in any language.

Present day and future economic conditions will challenge the efficiency of the entire printing industry in its attempt to meet the new requirements of the other industries which constantly offer new products made by better methods using better materials.

An editorial, in the November issue of *Industrial Marketing*, points toward the importance of modern equipment as a means of improving quality and speeding up production. The editorial writer comments:

"It may be unfair to this great field to say so, but it is our impression that the printing industry has lagged behind others in developing improvements in equipment and thus providing better service to consumers of printed products. It seems to us that the letterpress division of the industry has been particularly slow to provide new and improved designs, because many plants are running with equipment which is so old that according to most industrial standards it should have been declared obsolete years ago. On the other hand, the manufacturers of offset equipment have given the impression that they are alert to the needs of the industry and of business in general and have many spectacular advances in design."

The overall picture of the printing industry as of today reveals complicated procedures tied to deeply rooted traditions and practices. It shows great varieties of specialized printing equipment and a tremendous investment in so-called orthodox equipment with technical bottlenecks that defy change because of interdependent procedures and equipment.

The craftsmen engaged in letterpress, offset, and gravure branches are similarly set and grooved in the operation of their equipment according to its technical procedures. None has provided for future growth in adequate apprentice training to supply the needed manpower to function efficiently.

The paper and printing industry is facing greater demands by other industry for printed products and finer color work that must be delivered in shorter time periods. It also faces the need of shifting trends of the times, higher pay, shorter hours, increasing costs of materials, high taxes, the need for reserve funds for slack periods, and for new equipment and elbow room to work in the future.

The time is now for beginning a new printing industry with a new approach to bypass the technical bottlenecks of orthodox three-group equipments and procedures.

It is proposed to start with new foundations and use the latest and best of forces, materials, and procedures so that the buyers and users of printed products can obtain what is needed, when it is needed, at prices that are practical and economically sound, to provide craftsmen in the new printing industry with the means whereby it can sustain its place in a balanced world economy that must be worked out for the future welfare of all races.

The new start in printing can be made in a practical way without upsetting the present day operations on any existing plant or its personnel, or throwing a single operator out of work.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

[1] Huebner Laboratories, New York, N. Y.

One by one, new plants will be equipped and operated by newly trained personnel, the change-over will be effected at speeds consistent with the practical requirements of the buyers of printing, the ability of manufacturers to supply new equipment and the speed by which the operators can be trained to the new procedures.

The new steps are coordinated from the copy to the finished product ready for shipment. All procedures with their needed equipment and processes are coordinated to meet the requirements of the finished product.

Keen observers of trends in future requirements of users of printing must have first-hand practical experience as craftsmen in printing to appreciate worthwhile departures into new procedures intended to meet these new requirements. This is particularly true of those who direct and guide enterprises serving the public, from the publishers of books, magazines and newspapers to all branches of printing serving a useful purpose in the economy of human activities.

Anything new intended to supersede anything old must be distinctly better. Anything new intending to meet a useful requirement must be of distinct service to survive.

All branches of the graphic arts are technical at their roots. Some branches have grown through the years into highly technical and specialized subbranches.

In the printing arts, today's results are interlocked with old and basic concepts, to such an extent that anything old in printing must meet the challenge of the new to hold its place in the march of time. Thus the new trends require coordination in procedures, equipments and management, and, above all, intensive cooperation of trained craftsmen, because the new procedures comprise a new industry, a new start in printing, with new equipment and new jobs.

Printing Processes

The objective of all printing is to transfer ink, pigment or dyes, to paper or other suitable materials. The result is a visual printed record of texts and images multiplied conveniently for observation, communication and reference, useful for various human activities and progress. Printing is therefore "the art preservative of all the arts."

Since the beginning of printing, *pressure* has always been and is now employed in all forms of printing presses to transfer a thin film of ink, pigment or dyes, from the printing areas to the print-receiving materials.

The use of pressure in all orthodox printing will always be compulsory because the concept of printing in all its subsequent applications is based on the accepted and fully understood fact that pressure is a primary requirement to lift the ink from a printing plate to the paper.

Thus printing means impression and impression means pressure.

Regardless of perfection, if that were possible in the methods of plate and cylinder making and in the building of presses expressly designed for any orthodox printing method, pressure requirements would vary according to the printing area sizes, or the kind of material used to receive the ink impression.

Relief

In relief printing where the image area is raised above the body of the plate, press editions are usually printed from separate duplicates made from the original plate, such as electrotypes, stereotypes, molded rubber plates or plastic plates, two or three steps removed from the original.

Duplicate plates never equal the quality of the original plate, but in either case the amount of pressure required to print satisfactorily varies according to the size of the image area. Small relief areas require less pressure than large image areas on the same form. Thus make-ready is compulsory to supply more pressure where it is needed. Hence pressure and make-ready are basic reqiurements in relief printing

Pressure means friction and make-ready means wear on plates and presses. Here are the shortcomings of orthodox relief printing; also it has limitations in the selection and use of varieties of paper or other material on which to print from relief surface image areas.

Gravure

In gravure printing specially designed presses are built very heavy to permit the application of pressure to the back of the paper when it contacts the gravure cylinder. In gravure the image exists in pockets etched below the surface of the cylinder; thus heavy pressure is needed to lift the ink from the pockets. Here again there is pressure and friction with limitations in the varieties of paper which can be used to lift the ink from the pockets in the cylinder and present a smooth impression.

Offset

In offset or planographic printing less pressure is needed than in relief or rotogravure, because the rubber blanket surface which lifts the ink from the surface of the plate cylinder yields slightly, so that a pressure of 0.002 inches is sufficient to build up a satisfactory ink impression on the rubber blanket, if the blanket is uniform all over its surface. If it is not uniform, it has to be lifted and made ready by underlay to make the low places even with the high areas. Thus there is reduced make-ready time and reduced pressure in offset printing

Because of the yield to surface pressure in the rubber blanket used in the offset press, it permits the use of a greater variety of peper materials as compared to the variety which can be used successfully in the relief and gravure presses.

The reason why offset has succeeded in its competition with relief and gravure printing is because offset uses less pressure and prints successfully from original image plates on a greater variety of paper.

Pressure in Printing

The foregoing brief analysis of the use of pressure in printing adds up to the following:

1. Heavy costly presses are needed for each separate printing process: relief, gravure, offset, textiles, and metals, to meet *printing pressure* requirements.
2. Make-ready and consequent lost time in press edition production.
3. Friction and wear on plates and forms.
4. Misregister and registration difficulties where a multiplicity of plates, flat or curved, must be mounted and registered in flat forms or upon press cylinders.
5. Printing difficulties and limitations to practical printing materials.
6. Offsetting and ink drying troubles.
7. Costs in time and dollars on trouble shooting during production periods.

8. Cumulative delays and bottlenecks in preparatory work.

9. Plate making, form makeup, curved color plate assembly on cylinder form registration.

10. Duplicates or molded separate plates to make up a form for relief printing.

11. Quality losses and variables in printed editions.

12. Time and costs of all reproduction work from the copy to the press forms ready to print.

Static Electricity

With the demand for greater speed in printing, webs and sheets were fed into faster presses at corresponding paces. Press room trouble then appeared, known as effects from static electricity, which caused paper to curl, wrinkle, or stick together. It caused ink to vaporize and float in the air and pile upon opposite polarity surfaces. It also caused the ink printed on top of one sheet to offset to the bottom of the sheet delivered over it on the delivery pile. It attracts to the surface of the web or sheet dust and dirt particles and causes mottling of the printed image.

It is one of the primary causes of press room waste.

Close observation of static offsetting in offset press rooms led to tests which proved conclusively that ink can be discharged from many materials and attracted to paper when positive and negative polarities are known and controlled. As a result, ink can always be caused to leap across a space of several inches between the ink-holding material and the sheet of paper. This principle can be successfully demonstrated by anyone using the proper materials, by creating friction static charges upon film and paper, and by using correct polarities on the sheet of paper to attract the ink.

Electronographic Press

This discovery of controlled polarities of static charges led to research work over a period of twenty years. Tests have resulted in the use of electronic current generated from an alternating current power line, sent through transformers and then through electronic tubes, creating a flow of direct current electrons. Thus by the use of correct polarities applied by two separate circuits in a new cylinder press designed for the purpose, quality printing is *obtained without pressure,* using any practical printing image or texts method and produce better printing upon any commercially required material.

It must not be assumed from the foregoing statements that in electronographic printing the ink from the image flies through a wide space, because in demonstrating the principle of ink discharge by static attraction and repulsion above referred to observations may lead to the erroneous conclusion that a large space or gap exists across which the ink must discharge from the inked images to the paper, as *printing without contact,* because this is not a desirable or practical condition for all electronographic printing.

The practical space or gap between the surface of the uninked image carrier and the paper to be printed upon may be about 0.001 inch. The two surfaces may actually touch or contact in various places, but no pressure whatsoever is used.

If the space setting between two cylinders is widened, higher voltages are needed for ink transfer, and if carried too far result in coronas and arcings which are not desirable or practical and certainly are not needed.

Because of uneven thickness of paper stock, the paper will not space evenly between the inked image surface and the paper supporting cylinders when the cylinder and paper space relationship is set in the press. Thicker portions of the stock, however, may actually contact the ink image surface without the slightest pressure, and yet fine, sharp uniform printing will result without friction or wear.

When the image is inked, however, and the current is on, with correct polarity relations, the ink on the image bulges toward the paper, and if the paper is loose it will rise to meet the ink or image surface. As the voltage is raised the ink is transferred to the paper; thus there is the instant of contact during the instant of ink transfer.

If no electrical current is turned on and all static charges on image surface and paper are removed by complete grounding, no overall ink transfer or printing is attained because no printing pressure exists. Contacting ink spots or areas will obviously show, but no overall uniform printing is possible.

Precharge and Transfer Circuits

When the printing circuits are turned on, two important functions are set in motion. The first current circuit is directed at the inked image surface during cylinder rotation—from discharge terminals. The terminal is so placed that the ink on the image is ionized and charged with negative current electrons. The positive side of the first circuit terminal is used to precharge the surface of the paper, so that the ink is attracted to the surface of the paper at the usual printing line between two cylinders. This first circuit is named the *precharge circuit.*

The second current circuit is placed inside the cylinder and functions through two blades. The first blade is housed between two heavy insulators to direct the discharge of electrons to the sharp edge of the blade which is clear of contact from the inside wall of the image carrier cylinder or tube, but positioned in line of the usual contact point between two revolving cylinders.

The second blade is similarly housed inside the paper carrier cylinder or tube. The edges of the two blades face each other and are parallel for the inside length or width of each cylinder. The space relationship between the edges of the two blades is set at a point suitable for a maximum voltage to be used.

When this second circuit is turned on, its negative polarity discharges electrons toward the positive polarity blade edge, and transfers the ionized ink images passing between the two blades to the paper which also passes between the blades in timed surface speed with the travel of the image surface. Thus the second circuit is named the *transfer circuit.*

Observation of tests discloses the following facts: ink on the image surface actually bulges toward the paper surface, and the paper surface moves toward the inked surface if the paper is free to move.

During correct printing relationship the paper is obviously held against movement on the surface of its carrier cylinder. It is under this condition that the ink is transferred to the paper for quality of image sharpness of edges, and for exact register in color work.

The voltages used are comparatively low for so-called high potential currents. Excellent results are attained with voltages as low as 6500 on the transfer

circuit and around 8500 on the precharge circuit. These voltages vary according to the materials employed for the cylinders, ink, and paper.

The higher the voltage, the greater must be the distance between the blade edge terminals to prevent coronas and arcings. Long periods of tests show conclusively that low voltages properly spaced and controlled give best results under average working conditions.

Proof of performance is offered by the exhibit of a steel cylinder carrying tool grooves made when it was turned true on a lathe and subsequently had a thin copper relief plate mounted on the surface of the cylinder and soldered at the edges of the copper plate. The thickness of the copper at the large letter surfaces which are etched in relief is approximately 0.022 inch. Ink applied to the image surface will transfer to the paper where the electrons stream off the crests of the tool cut grooves and follow straight paths through the copper plate. The valleys of the cut will leave spaces relatively clear of ink on the printed result, proving conclusively that finely divided streams of electrons will maintain these divided lines of travel through the thickness of the copper sheet and transfer ink on the surface of the image only where the ink lies in the path of separated electron streams.

If pressure existed between the ink image and the paper, the foregoing description of ink image transfer could not occur.

The pathways of electron flow through copper plates can be repeated for observation by using the transfer circuit only, because the precharge circuit functions to attract the ink image to paper evenly without the valley grooves appearing on the printed result. In practice, however, polished cylinder surfaces are used, which produce smooth, uniform, and finely printed images.

Static

Static charges generated by paper webs running at high speeds over cylinders covered with suitable materials produce high potential currents having definite polarities on both sides of the paper web.

When the polarities on the paper are controlled in correct relationship to the polarity of charge on the inked image, ink transfer from the image to the paper web is accomplished without pressure and without assistance from the direct electronic current.

After the web receives the ink image it is passed over discharge rollers where the static on both surfaces of the web is removed or grounded after serving the useful purpose in printing without pressure.

The static voltage before gronuding is controlled by gap terminals whereby the useful voltage builds up to the limit set. However, the application of generated direct electronic current is used because electronic tubes provide a steady flow of released electrons needed for uniform results, whereas static charges build up voltage until it spills over at the spaced ground points but with complete discharge, after which it builds up again. Thus intensity variations occur which are not desirable.

In addition, the intensity of static is affected by atmospheric moisture. Therefore, electronic current with steady flow and controlled voltages is the practical force used in electronography.

Summary

Make-ready time and costs have been a necessary expense up to now because variables in plate thickness of original plates and molded or duplicate plates, flat or curved, do not meet the needed accuracy of a contact printing line during printing.

Overlay and underlay or bumping curved plates to the needed pressure transfer of ink is a serious bottleneck in the large branch of the printing industry and costs many millions of dollars annually.

The make-ready time reqiured to mount, register, and hold a multiplicity of separate plates on orthodox press cylinders enforces the waiting or nonproductive time of fast expensive presses, and is now replaced by a new and economical procedure of cylinder making for exclusive use in the electronographic press.

Experience teaches that electronographic continuous printing surfaces carrying all original images in preregister on light weight cylinders or tubes which can be easily placed in and removed from the press in a comparatively few moments, will presently replace individual, curved plates used in present-day procedures.

The electronographic press serves the users of printing because electrons are released to ionize ink images, to control electric surface charges heretofore troublesome, to perform a useful function in printing, and by the final transfer line of force, produce a printed result more useful, more flexible, and more economical, because printing can be done better without makeready and without pressure.

New TAPPI Members

The Technical Association of the Pulp and Paper Industry has elected the following to membership:

Thomas J. Desmond, Technical Representative of E. I. duPont deNemours & Co., Inc., Wilmington, Delaware, a 1933 graduate of the University of Maine.

Louis C. Gischig, Research Assistant, The Philip Carey Mfg. Co., Lockland, Ohio, will graduate from the University of Cincinnati in June, 1946.

Harold W. Greider, Director of Research, The Philip Carey Mfg. Co., Lockland, Ohio, a 1916 graduate of Washburn College; M. S. from Kansas University, 1917.

Henry B. Harris, Jr., Superintendent, Creping Dept., Union Bag & Paper Corp., Savannah, Georgia, a 1940 graduate of Georgia School of Technology.

Tor Nielsen, Chemical Engineer, M. Peterson & Son A/S, Moss., Norway, a 1940 graduate of the Technical University of Norway.

Charles L. Pinat, Director General of Papeteries du Marais, Paris, France, a 1932 graduate of Grenoble University.

Stewart L. Seaman, Nylon Technical Engineer, E. I. duPont deNemours & Co., Inc., Wilmington, Delaware, a 1936 graduate of Cornell University; M. A. at Columbia University, 1939.

John Temperley, Technical Director, Walmsleys (Bury), Ltd., Bury, Lancashire, England. Attended the University of Manchester.

Frank E. Toonder, Research Supervisor of Inorganic and Pigment Div., Wyandotte Chemicals Corp., Wyandotte, Michigan, a 1929 graduate of Kalamazoo College; Ph.D. from Brown University, 1933.

Henry L. Albert, Chemist, Fraser Companies Ltd., Edmundston, N. B., Canada, a 1942 graduate of St. Francis Xavier College.

Howard G. Beyer, Plant Manager, Payne-Jones, Inc., Lowville, New York.

Daniel D. Cameron, Service Engineer, Hercules Powder Company, Kalamazoo, Michigan, a 1939 graduate of Purdue University.

The Curling of Lithographic Papers*

By Robert F. Reed[1]

Abstract

There are three fundamental types of paper curl: (1) inherent curl, built into or acquired as a result of improper manufacture or handling; (2) moisture curl, caused by nonuniform moisture distribution, or by the presence of too much or too little moisture; (3) structural curl, caused by changes in structure of the paper. These types of curl, the paper properties which aggravate them, and their occurrence in lithographic operations are discussed, together with their identification and methods of prevention.

Curling, in one form or another, is a constantly recurring problem in the handling of lithographic paper and in the use of lithographed products. It assumes various forms, interferes with production in various ways, and, in many cases, detracts from the quality and usefulness of the finished article.

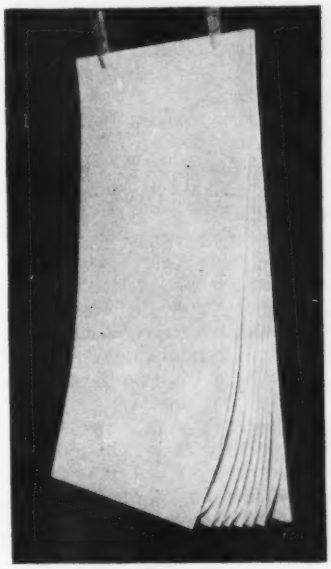

FIG. 1
Lift of Offset Paper Showing Typical Reel Cut.

In the pressroom, curly paper does not feed or jog properly, and causes press stoppages and register trouble. Sheets that have been once through the press are often difficult to run through a second or third time because of curl. Printed labels and wrappers sometimes curl in such a way that they will not work properly in labeling and wrapping machinery. Often it is difficult to determine the cause of the curl, and whether the fault lies in the paper or in a lithographic operation. And, without correct diagnosis, remedial measures cannot be taken with any assurance of success.

When curling trouble occurs it is often blamed on the paper without taking into consideration the conditions to which the paper has been subjected in producing the job. The paper may or may not be at fault, but, in many cases, no justifiable conclusion can be drawn and no satisfactory remedy found without reliable knowledge of paper structure and properties and their reaction to moisture and to the forces exerted on the paper in lithographic operations. This discussion is an attempt to analyze and classify the various types of curl encountered by lithographers, and to suggest, where possible, practical remedies and preventive measures.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

[1] Member TAPPI; Research Director, Lithographic Technical Foundation, Chicago, Ill.

Structure of Uncoated Paper

The structure of paper is determined by the particular materials and forces that enter into the papermaking operation. The pulp used may be composed of long or short fibers, or a mixture of both. It may be weakly or strongly beaten, and the action of the beater may be principally to cut the fibers into short lengths or to bruise, shred, and hydrate, without shortening them. The paper machine may be run fast or slow and with more or less crosswise shake of the wire, conditions which determine the amount of "crossing" of fibers. The extent to which the web is pressed while wet, and the degree of calendering it receives when dry, together with degree of beating of the pulp, determine the compactness or density of the finished paper.

Paper, therefore, is a more or less porous felt, the pores or voids of which sometimes amount to half its total volume. It has the characteristics of grain, two-sidedness, and density, all of which contribute to the production of curl under certain definite conditions. In fact the current methods of measuring "curling tendency" make use of the effects of changes in moisture content on the structure of paper in such a way that these three characteristics are the controlling factors.

When the Bureau of Standards curl sizing tester *(1)* is used, the specimen is wetted on one side and maximum degree of curl is attained when the moisture has penetrated halfway through the paper. In this method grain and density are the controlling factors. When the Gurley-Witham curl and shrinkage tester *(2)* is used, the specimen is strongly dried to produce curl, and the controlling factors are two-sidedness and density. Actually, grain and two-sidedness are related in such a way that correlation between the results obtained with these two instruments is very good.

But there is another structural characteristic which is an important cause of curl. This character-

FIG. 2
Skid of Paper Showing Wavy Edges across the Grain Resulting from Moisture Pick-Up.

istic is the presence of residual unrelieved stresses which may be likened to the stresses in metal or glass that has not been annealed. Most machine-made papers are dried under tension so that practically all shrinkage takes place in the cross direction. As the web dries, therefore, the individual fibers are stressed in the machine directions and remain in a stressed condition in the dried web. This stressed condition of the fibers is probably still further increased by calendering.

The presence of unrelieved stresses can easily be demonstrated by moistening a sheet of paper and allowing it to dry again to its original moisture content. Measurements will show that this treatment has caused the sheet to become shorter in the machine direction and sometimes also in the cross direction as a result of relaxation and readjustment of the fibers to reduce stresses to a minimum. It might be said that remoistening has annealed the sheet. Pole and loft-dried papers, which are not dried under tension, show less dimensional change when remoistened and dried than machine-dried papers.

Machine-dried papers retain their unrelieved stresses under normal atmospheric conditions. But, if exposed to an atmosphere of sufficiently high relative humidity for the fibers to become limp and flexible, their stresses will be relieved and sheet dimensions will be altered.

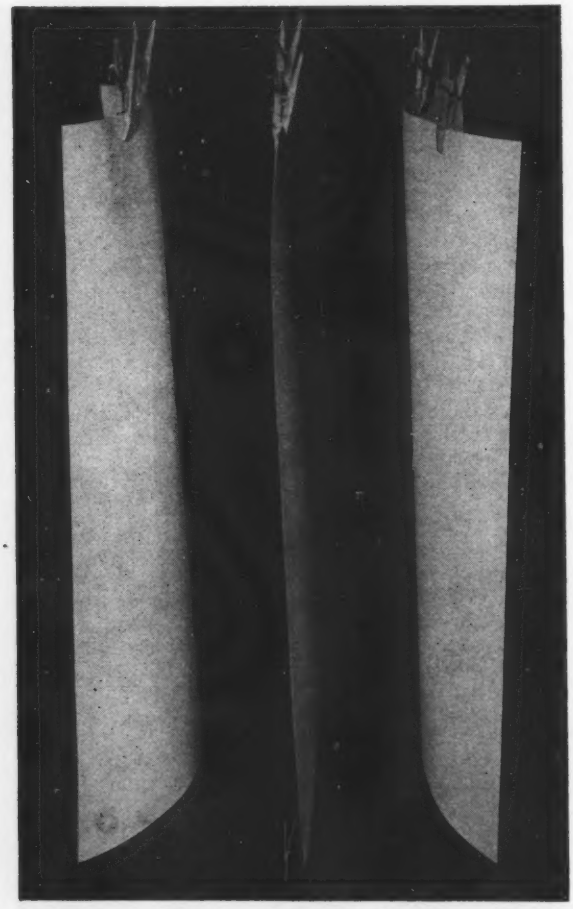

FIG. 3

Single Sheets of Offset Paper Showing Typical Moisture Curl: Left—Sheet Conditioned at 15% R.H., Curling toward Wire Side. Center—Same Paper, Conditioned at 45% R.H. Right—Same Paper, Conditioned at 75% R.H., Curling toward Felt Side.

Structure of Coated Paper

The structure of coated papers is more complex than that of uncoated papers. Coated-one-side paper is really two different sheets bonded or laminated together. Coated-two-side paper is really a combination of three sheets. The body stock, being fibrous, is the "backbone" of the sheet and gives it its strength properties. The coating, which is nonfibrous, has little strength of itself but sufficient to affect the structural properties of the finished sheet, particularly two-sidedness. The fibrous body stock has grain, and therefore a greater expansivity in the cross direction than in the grain direction, with increase in moisture content. The coating has no grain and tends to expand or contract uniformly in all directions when its moisture content changes.

A coated-one-side sheet, therefore, has a condition of two-sidedness not present in machine-finished paper. This, however, does not necessarily make it more susceptible to curl. The coating is generally applied to the wire side of the body stock, the side which has the greater expansivity in the cross direction, and may actually reduce this expansivity while, at the same time, increasing the expansivity in the grain direction. Thus the coating may make the expansivity of the wire side more like that of the uncoated felt side and therefore reduce the curling tendency of the sheet.

What actually happens depends on the nature of the body stock and of the coating. If the body stock is hard and the coating soft, the curling tendency of the sheet will depend largely on that of the body stock. The harder the coating, however, the greater will be its influence on the curling properties of the sheet. It is the coating mills' problem to so balance the characteristics of the body stock and coating that the sheet will have a minimum tendency to curl.

A coated-two-side sheet generally has less tendency to curl than either machine-finish or coated-one-side paper. This is because of the stabilizing effect of laminating the body stock between two layers of coating of equal and uniform expansivity.

The characteristics of coated papers depend also upon the amounts of coating they carry. In modern machine-coated papers, carrying 3 or 4 pounds of coating per side per ream, the curling tendency is much more like that of the body stock than in enamel papers carrying 12 or 15 pounds of coating per side per ream.

Primary Causes of Curl

A sheet of paper will be perfectly flat if the dimensions of its two sides in both the grain and cross directions are exactly equal. If it curls toward the felt side, this is because at least one dimension of the felt side is less than the corresponding dimension on the wire side. If it curls toward the wire side, at least one dimension of this side is less than the corresponding dimension of the felt side.

Various conditions can bring about differences in the dimensions of opposite sides of the sheet, and these will be discussed later on. The degree of curl produced, however, depends to a large extent on the structural characteristics of the paper—particularly its density. If it is soft and flexible, the sheet will tend to lie flat because of its own weight and curling will not cause serious trouble. On the other hand, if the paper is dense and rigid, any difference in dimensions of the opposite sides will cause a pronounced curl. And, since papers are invariably more rigid when their moisture content is low than when

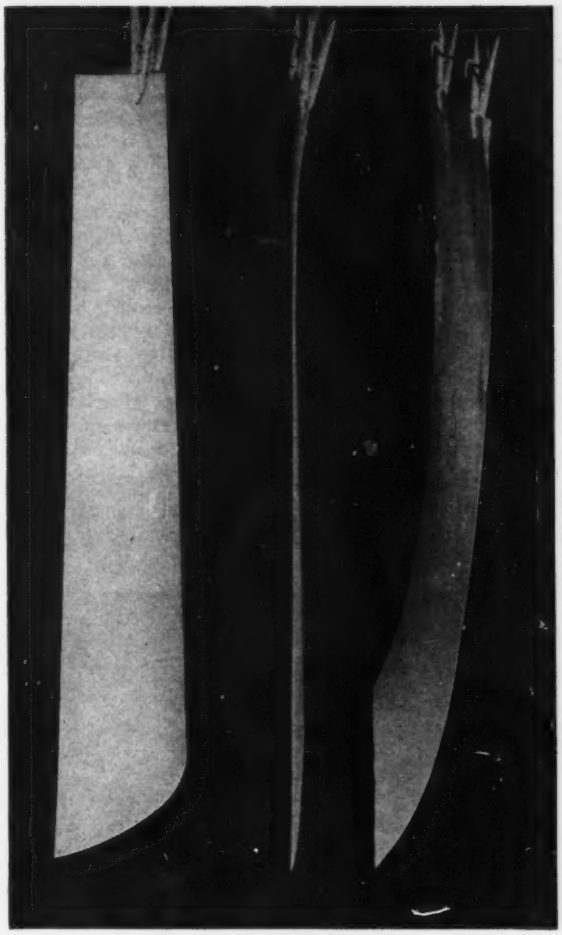

FIG. 4

Single Sheets of Coated-One-Side Paper Showing Moisture Curl: Left—Sheet Conditioned at 75% R.H., Curling toward Coated Side with the Grain. Center—Same Paper, Conditioned at 45% R.H. Right—Same Paper, Conditioned at 15% R.H., Curling toward the Coated Side against the Grain.

it is high, the dryer they are the greater is their tendency to curl when these dimensional differences exist.

Two-sidedness contributes to curling since the greater its degree, the more susceptible the paper is to differential dimensional changes, other things being equal. The combination of a high degree of density or rigidity and extreme two-sidenedness in paper gives it the greatest tendency to curl.

Both the Bureau of Standards' and Gurley methods of testing paper for curling tendency are useful in rating different papers according to "curliness" and in controlling this property in paper making. But, while the types of curl they produce and measure are often observed in the practical use of lithographic papers, they are not the only types of curl encountered. It is true that if any two papers, one of which has a greater curling tendency than the other, are handled under exactly the same conditions in the pressroom, the one with the greater curling tendency will cause more trouble than the other. But there are times when the less curly paper will cause trouble while the paper with the greater curling tendency will work satisfactorily. The reasons for this apparent paradox lie, of course, in the fact that the conditions of handling in the pressroom are different. Explanation of curl in any case, therefore, must take into consideration both the nature of the paper and that of the operations through which it passes to produce the finished lithographed product.

Types of Curl

As already stated, the primary cause of curl is a difference in the dimensions of the felt and wide sides of the sheet. However, the types of curl observed in the daily handling of lithographic papers can be divided into three classes according to cause of such dimentional differences:

1. Inherent curl; curl that is built into or acquired by the paper as a result of improper manufacture or handling.
2. Moisture curl; curl caused by nonuniform moisture distribution in the sheet, or by the effect of too much or too little moisture in causing dimensional differences between the felt and wire sides.
3. Structural curl; curl caused by a change in structure of the paper resulting from a lithographic or finishing operation.

It must be understood, of course, that there are contributing factors which can aggravate or minimize curl regardless of its type. The primary contributing factor is density. But, since density is related to degree of hydration, expansivity, and porosity, it may be said that any one of these properties affects curl. A dense, highly hydrated paper will curl at the least provocation, regardless of cause, while a soft, porous paper, under much worse conditions, will remain practically flat.

Inherent Curl

There are two principal types of inherent curl—"reel-curl" and "edge-set." Reel-curl, of course, results from sheeting paper too close to the center of the roll. It has two characteristics by which it is easily recognized (1) it is always against the grain (axis of curl across the grain), and (2) it is never uniform from sheet to sheet, but shows up usually only in every fourth, fifth, or sixth sheet in the pile. Reel-curl is usually toward the felt side, but is sometimes toward the wire side, depending on the mill practice in sheeting from wind-up or rewound reels. It always appears on both ends of the sheets.

Reel-curl, if serious, can cause endless feeder trouble on the press, especially if the sheets curl up. The only possible remedy is to reverse the sheets on the feeder pile so that the curl is down. In fact the mill sometimes delivers paper wire-side up if reel-curl toward the felt side is evident.

"Edge-set" occurs in case-packed paper if the cases are not packed tightly and are stood for any length of time with the sheets resting on edge. This type of curl, unlike reel-curl, occurs on every sheet, but usually only on one edge. It may be either with or against the grain, depending on which edge was down. It can be avoided by the proper handling of cases in transit and in storage so that the sheets are always in a horizontal position.

Moisture Curl

The most commonly encountered types of moisture curl are caused by nonuniform moisture distribution in the sheet. This nonuniformity can be of two kinds: (a) Excess of moisture in the felt side as compared with the wire side, or vice versa; (b) Differences in the amount of moisture in different areas of the sheets.

An excess of moisture in one side of the sheet may result from (1) exposure of that side to a moist atmosphere, or (2) from liquid moisture picked up

FIG. 5
Delivery End of Offset Press Showing Temporary Curl of Sheet with the Grain, Caused by Moisture Pick-Up.

from the offset blanket during printing. In pressroom experience, case (1) is relatively unimportant since it occurs in only the top sheet on the pile. Case (2) is more important since it may occur in all sheets, and the curl produced may be serious enough to prevent proper jogging on the press delivery. In either case, the curl is only temporary because the moisture permeates the entire thickness of the sheets in a matter of minutes, and they either flatten out again or take on other type of curl which is permanent and which will be described later. Obviously the only preventive of *press-moisture curl* is to carry a minimum of moisture on the printing plate.

A deficiency of moisture on one side of the sheet can occur temporarily if the pile of paper is exposed to too dry an atmosphere. In this case a few of the top sheets will curl upward.

Differences in amount of moisture in different areas of the sheet can result from various causes. If a pile of dry paper is exposed to a humid atmosphere the edges will absorb moisture and expand while the remainder of the sheets remain unchanged. This expansion, of course, causes the edges, particularly across the grain of the paper, to expand and become wavy. If, on the other hand, a pile of moist paper is exposed to a dry atmosphere the edges of the sheets will lose moisture and contract, particularly across the grain. This condition produces a baggy or tight-edged sheet. Both *waviness* and *tight-edge* are in reality types of curl. Their principal effect is to interfere with register. They can be avoided only by preventing exposure of the pile to any atmosphere not in hygrometric equilibrium with the paper. This can be done by observing the following precautions:

1. Never unwrap a skid or unpack a case of paper until it has first attained temperature equilibrium with the surrounding atmosphere.
2. As soon as the paper is unwrapped or unpacked, test it for variance from equilibrium with the surrounding atmosphere. If the variance is appreciable, the paper should be reconditioned before printing.
3. Keep piles of paper covered with moistureproof material between printings to protect them in case of changes in atmospheric humidity.

Nonuniformity of moisture in paper can also result from nonuniform dampening of the plate during printing. Thus, after the press moisture has permeated the entire thickness of the sheet, there would be one or more streaks from the front to the back edge that contain excessive moisture. If the moist streaks occur at the edges of the sheet these will become wavy and prevent register in printing succeeding colors. If, however, they occur through the main body of the sheet, no waviness or curl may be immediately evident. But, if this work happens to be a sheet of labels, trouble will be encountered because of curling of some of the labels, but not others, after they are out. This type of curl will be described more fully under the heading "Structural Curl."

Another type of curl that can be classified as moisture curl is that caused by too much or too little moisture, even though such moisture is uniformly distributed throughout the sheet. Almost any sheet will curl toward the felt side if too moist, and toward the wire side if too dry. This type of curl is due entirely to two-sidedness, that is, to differential expansion or contraction of the felt and wire sides. Curl caused by excessive dryness is always more troublesome than that caused by excessive moisture, because dryness is accompanied by increased rigidity.

STRUCTURAL CURL

Structural curl is the result of a permanent change in the structure of an originally flat sheet. And, practically speaking, there are two ways in which structural change can be brought about in pressroom and finishing operations: (a) Relieving stresses in the fibers on one side of the sheet but not the other; (b) Mechanically breaking a portion of the bonds between the fibers which make up the sheet. As previously stated most machine-made papers contain unrelieved stresses as a result of being dried under tension, and calendering. If the paper is flat it is because these stresses are balanced, that is, their total combined effect is the same on both sides of the sheet.

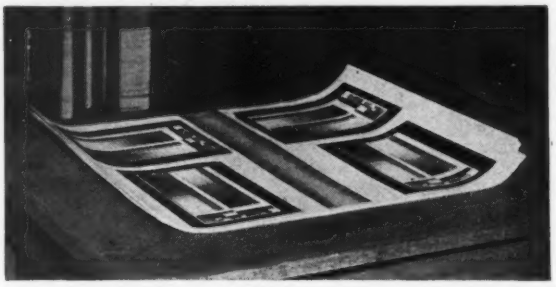

FIG. 6
Printed Sheets Showing Permanent Curl against the Grain Resulting from Excessive Press Moisture.

Stresses in paper are retained under conditions of normal moisture content. But if the moisture content is raised above 9 or 10%, the fibers become limp and flexible and rearrange themselves so that the original stresses are relieved. This rearrangement results in the sheet becoming pemanently shorter in the grain direction and sometimes also in the cross direction, after it is brought back to its initial moisture content.

Now, if a sheet of paper is moistened on one side only in such a way that the stresses are relieved on that side but not on the other, the moistened side only will change its dimensions and the sheet will take on a permanent curl. In offset printing, for example, the running of excessive fountain water on the plate may cause enough moisture to be picked up and absorbed by the printed side of the paper to soften the surface fibers and relieve their stresses. As the sheet passes to the delivery pile part of this moisture evaporates, and the remainder quickly diffuses throughout the sheet until its moisture content becomes uniform.

In the final condition, however, even though the moisture content of the sheet may have been increased 0.2 or 0.3%, this is not enough to relieve stresses in the body of the sheet and only the surface fibers on the printed side will have been affected. The result is that the printed side becomes shorter, usually in both directions, while the back of the sheet expands somewhat in the cross direction. The sheet, therefore, finally tends to curl in two directions: (1) toward the printed side against the grain, and (2) toward the printed side with the grain. Obviously it cannot curl in both directions at the same time, and the curl which is strongest will prevail. The final direction of curl, therefore, depends on the structural characteristics of the individual sheet and there is no sure way of predicting it.

It is common observation that printed sheets arriving at the delivery of the offset press show a curl with the grain and toward the back. That is, the front and back edges curl down. This curl is usually caused by "moisture pick-up" as described. It can also be caused by "breaking" of the sheet if the blanket is tacky or if solids are being printed with tacky ink, and this condition will be discussed later on. The amount of curl resulting from moisture pick-up, however, depends on:

1. The amount of moisture on the printing plate. The greater the amount of moisture the greater the curl.

2. The hardness and density of the sheet. A hard bond will curl much more than a soft M.F. paper of the same thickness.

3. The thickness of the sheet. A thin sheet will curl more than a heavier sheet of the same type.

But this curl is usually only temporary and disappears as soon as the moisture has had time to penetrate or diffuse throughout the thickness of the sheet. Then, if the moisture originally absorbed by the printed side was sufficient to relax its surface fibers,

FIG. 7
Labels Showing Curl against the Grain.

a new type of curl will appear which is permanent—a curl that is toward the printed side, often against the grain.

Since structural curl of this type is caused by excessive plate moisture, and since excessive plate moisture may occur during only a portion or portions of a run, it often happens that only part of the printed sheets will curl. Also, since only a portion of the plate may carry excessive moisture, the curl may not be evident until the sheets are cut, when some parts will curl and others will not. This accounts for the fact that when a label job is cut some of the labels may curl while others remain flat. Sheets which have received excessive moisture all over will produce all curly labels. But if the dampening was nonuniform

FIG. 8
Lithographed Letterhead Showing Curl against the Grain.

only labels from the excessively moistened areas of the sheet will curl. Sometimes all of the labels curl but the degree of curl varies over different areas of the sheets. It has even been found that some of the labels curl with the grain and others against the grain, in the same sheet.

Obviously, when paper is printed on both sides, any curling tendency caused by relief of strains between surface fibers on one side will tend to be counteracted by a similar relief of strains on the opposite side. But when only one side is printed there is no such compensation, and prevention is the best cure. However, if a printed-one-side job shows objectionable structural curl, this can be remedied, to some extent at least, by the expensive method of running the paper through the press, using a blank plate to apply moisture to the unprinted side.

Mechanical "breaking" of the sheets as a result of excessive force required to peel or strip them off the blanket as previously mentioned, results in another form of structural change which produces curl. The sharp bend as the sheet leaves the blanket causes part of the bonds between the fibers or in the coating on

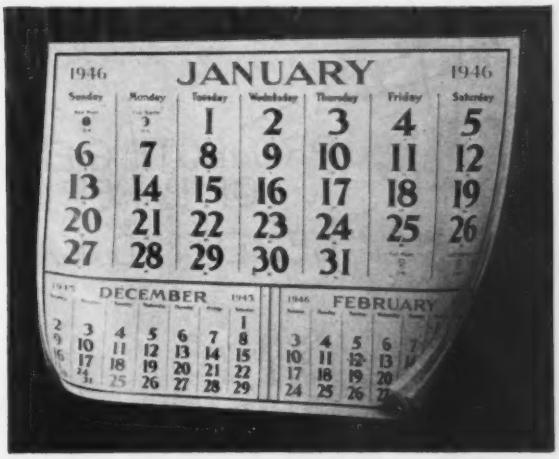

FIG. 9
Calendar Pad Showing Typical Structural Curl.

the printed side to break. This produces a permanent curl *with the grain* and toward the back or unprinted side—the same as the temporary curl caused by moisture pick-up. The difference is that it is permanent.

The "embossing" of light weight label sheets is in reality a form of curl and is also due primarily to mechanical "breaking" of the sheet in areas printed in solids. In this case the tack of the ink produces the pull that causes the "break."

There is no practical remedy for curl or embossing which results from "breaking" of the sheet, once this has occurred. Preventive measures, however, include avoiding use of a tacky blanket, use of a minimum of pressure in printing, and keeping the tack of the ink as low as possible.

Literature Cited

1. Carson, Frederick T., and Worthington, Vernon, Measuring the degree of curl of paper. National Bureau of Standards Research Paper RP 1522.
2. The Gurley-Witham Curl and Shrinkage Tester. *Paper Trade J.* 111, No. 28 (Nov. 28, 1940).

Adhesiveness of Seals and Closures for Packages*

TAPPI Suggested Method T 806 sm-46

This method is applicable to testing the adhesive used for forming seals, closures and seams of heavy paper or paperboard packages. It indicates the suitability of the adhesive for the specific material on which the test joints are made but the results are not necessarily indicative of the quality of the adhesive when applied to other materials. In general, Method A described below is more drastic than Method B and many samples failing the former will give satisfactory fibrous separation under the latter.

The criterion of the adhesive strength of a seal or closure is the area showing separation of fibers when the two glued or cemented materials are separated An ideal seal would show 100% fibrous separation.

Apparatus

1. *Tensile Testing Machine* in accordance with TAPPI Standard T 404 m.

* This method is suggested by the Packaging Materials Testing Committee as being the most suitable to date. It is *not* however, a TAPPI Standard. Criticisms are earnestly requested and should be sent to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper Industry, 122 East 42nd St., New York 17, N. Y.

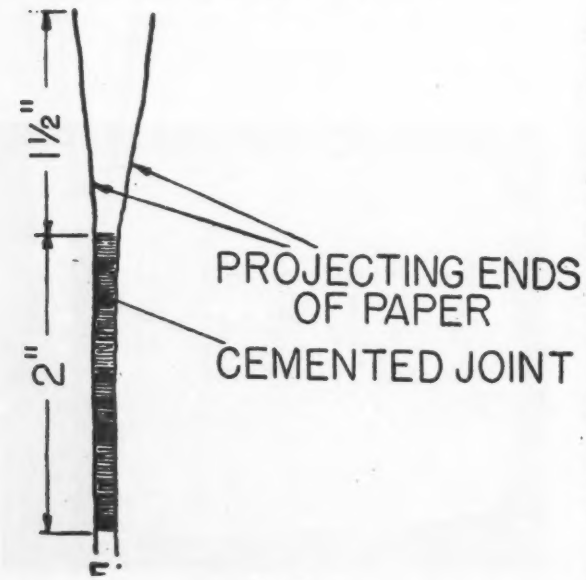

FIG. 1
Prepared Specimen

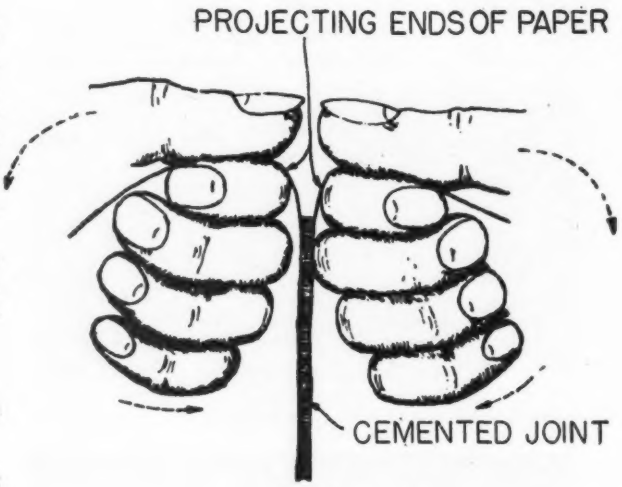

FIG. 2
Method of Separation

2. *Shallow Tray or Dish* for immersing specimens 1 by 3½ inches under 2 inches of water.
3. *Blotting Paper* for removing excess water from specimens after immersion.

Test Specimen

If finished seals are not available, prepare a seal using samples of the flexible packaging material and adhesive in question. Condition two pieces of the paper or paperboard, each 12 by 3½ inches, in accordance with TAPPI Standard T 402 m, and cement the two pieces together with a 2-inch wide joint along the 12-inch sides, applying the adhesive as in actual use. For example, in a longitudinal seam, one face of the material is usually joined to the opposite face; on an end seam the grain of the two sheets may be at an angle. If any difference is suspected, use the combination which will give the greatest fibrous separation. Allow to season for 24 hours under the standard atmospheric conditions and cut into strips 1 inch wide across the joint to form specimens as illustrated in Fig. 1.

When finished seals or seams are available, cut strips 1 inch wide perpendicularly across the seal or joint, adjusting the length so that both sheetings will extend, whenever possible, approximately 1½ inches

beyond one edge of the cemented joints, as in Fig. 1. If less than 1½ inches is available, leave these projecting ends as long as possible for convenience in testing.

Procedure

Method A shall first be applied. If no fibrous separation occurs, Method B may be used to measure the degree of adhesion.

According to the information desired, each test shall be conducted after the samples have been conditioned in accordance with TAPPI Standard T 402 m (dry test), or after soaking in water (wet test). For the latter purpose, submerge the test specimens in 1 to 2 inches of distilled water at 23 ± 2° C. for 24 hours. Remove one specimen at a time, blot off the excess water with blotting paper and test before removing the next specimen.

METHOD A

Grasp the projecting ends of the specimen with one thickness between the thumb and forefinger of each hand, the forefingers resting against the cemented joint, one on each side, as illustrated in Fig. 2. Separate the joint by gently pulling the ends apart with a rolling motion from the top downward with the second joints of the second and third fingers successively resting against each other to act as fulcrums. Examine the manner of separation of the joint, noting the percentage of separation that occurs without fibrous failure of the paper surface. Test not less than ten strips for each determination.

METHOD B

If the jaws of the tensile tester will not accommodate a 1-inch wide strip, with a pair of scissors or a sharp knife trim the width of projecting ends so that they can be clamped symmetrically; or, if the adhesive is sufficiently strong, the strip may be narrowed to suit the width of the jaws. If necessary, remove the detachable weight and its pin from the pendulum of the tensile tester and recalibrate the instrument as specified in TAPPI Standard T 404 m. Insert the projecting ends of each specimen in the jaws, and apply the load, if possible, at such a rate that the jaws and sheets separate at the rate of about 12 inches per minute. Test at least ten specimens and determine the average maximum load required to separate the joint of specimens 1 inch wide.

In Method A, dry, separation of the adhesive from more than 10% of the surface of either ply without visible fiber failure shall be considered failure of the adhesive. In Method A, wet, similar separation of more than 25% of the surface of either ply shall be considered failure of the adhesive. If not more than 10% of the specimens fail in this manner, the adhesive shall be reported as being adequate for the material joined together.

If Method B is used, the strength of the adhesive shall be reported as the average load in pounds per inch of width required to separate the joined material, either wet or dry or both.

The report shall also state (except in the case of original finished seals) the method used and the manner in which the closure was formed, i.e., same faces, opposite faces, grain parallel, grain at right angles, grain at oblique angle.

Maine–New Hampshire TAPPI Meets at Rangeley

The Maine-New Hampshire Section of the Technical Association of the Pulp and Paper Industry met at Rangeley Lakes, Maine, on June 28th and 29th. Clifford Patch of the Eastern Corporation, So. Brewer, Me., presided as chairman. About 150 attended.

The meeting was planned by the following committees: Arrangements—E. L. Lamb, Oxford Paper Company, chairman, J. W. Wright, National Aniline & Chemical Company, and W. V. Torrey, S. D. Warren Company; Technical Program—J. L. Parsons, Hollingsworth & Whitney Company and H. C. Press; Fishing Derby—H. P. Waldenmeker, Oxford Paper Company, F. A. Strovink, American Cyanamid & Chemical Company, Fred Gibbs, Wallace & Tiernan Company, and R. A. Webber, Brown Company; Golf —C. I. Horton, R. T. Vanderbilt Company and R. G. Adams, International Paper Company; Bridge—Mrs. E. R. Comee and Mrs. W. E. Brawn of Brunswick, Maine.

Friday Technical Program

J. L. Parsons presided at the Friday afternoon technical program.

George Nystrom of the University of Maine gave a progress report on "Semichemical Treatment of Mill Wood Waste by the Sulphite Process." Mr. Nystrom outlined the history of the development of semichemical processes since 1925 and showed the result of pulping two cubic feet of waste white pine wood by the regular cooking processes in which the time of cooking was varied. The cooked product was refined in a rod mill and a standard TAPPI beater. Yields of 57.9 to 72 per cent were obtained in cooks of six and three hours respectively. The five hour cook gave the greatest strength. White pine is available in considerable amounts in Maine and its utilization needs further study. The semichemical process appears to be one method of using it and obtaining a high yield.

Dr. Jenness of the University of Maine substituted for C. C. Chang in giving a progress report on "A Study of Wetting Agents on the Acid Sulphite Cooking of Pine." Although the prevailing price of wetting agents have not made them economic for use in this process, this study was made primarily to evaluate the various types of agents. The cooking procedure was orthodox and the basis of the results was the relative percentages of screenings obtained, using 2% on the dry weight of the wood of anionic, cationic and nonionic agents supplied by one chemical company. The wetting agent was added when the acid was being made for the cooking liquor. To date the use of the agents have shown no effect on the physical properties of the pulps produced. The use of the nonionic agent resulted in the least screenings, the cationic agent was

nearly as effective and the use of the anionic agent appears to be detrimental. New nonionic agents are being developed that will possibly reduce their cost per ton of pulp from $21 to $3. Further progress may be made that may justify their use.

Lewis C. Swain of the University of New Hampshire talked on "Pulpwood as a Farm Crop." He pointed out that about one-third of the New Hampshire forests are located in very extensive farm areas. To enable industry to take advantage of this potential wood supply considerable farmer education and cooperation will be necessary. The development of the system of county agents provides a medium for such contacts. To be successful the farmer will need to know more about user requirements in order to know what species will be most useful and profitable to grow and harvest.

Election of Officers

W. E. Brawn of the Pejepscot Paper Company and Paul D. Bray of the University of Maine, members of the nominating committee, presented the following slate of officers who were subsequently elected: Chairman—E. L. Lamb, Oxford Paper Company; Vice Chairman—J. L. Parsons, Hollingsworth & Whitney Company; Secretary-Treasurer—H. E. Pratt, Pejepscot Paper Company; Executive Committeemen—W. V. Torrey, S. D. Warren Company, A. P. Gregory, Maine Seaboard Paper Company, J. F. Wright, National Aniline and Chemical Division, G. A. Day, Brown Company, W. A. Ketchen, Fraser Companies Ltd., R. G. Evans, International Paper Company, and R. P. Whitney, University of Maine.

Upon motion of A. G. Durgin of the Brompton Pulp and Paper Company a vote of thanks was voted for the fine work of the outgoing officers and executive committee.

Dinner Program

In the evening following the dinner the speaking program was continued. L. E. Seely of the University of New Hampshire reported on current work being done at the Engineering Experiment Station. This included a number of wartime problems, paper coating, use of lignin as a soil conditioner, use of wood yeast for cattle food, manufacture of acoustical board, cellulose swelling agents, etc.

Roy P. Whitney of the University of Maine reported on the progress of the new department of industrial cooperation and outlined some of the policies that have been adopted. The department intends to work with industries on a self sustaining basis if possible and would welcome opportunities to work with industry.

David H. Stevens, State Assessor for Maine reviewed the forest resource situation in the State and pointed out the great threat of the bronze birch borer and the spruce bud worm which is causing havoc. He commented on statistics obtained from the Sewall Report and indicated that an extensive study is being made of the problem of establishing an equitable basis for forest taxation. Under the present system it would be out of the question for an individual to own and retain forest land for investment.

Saturday Program

On Saturday morning F. C. Goodwill of the St. Regis Paper Company, Deferiet, N. Y., discussed "Bleached Groundwood." In this talk he reviewed the process details as practiced at the Norfolk, N. Y., mill where it has been in operation for the past six years, producing 30 tons daily. Referring to costs he pointed out that eight points brightness increase is obtained at $7.35 per ton. Plans are going ahead to bleach mixed groundwood and unbleached sulphite. A gain of 10 points at a reasonable cost is expected. In the discussion that followed it was brought out that hemlock does not bleach well and its presence in mixed woods has a deterrent effect. Similar results were obtained with southern pines. However, good results were obtained with white pine.

The "Starch Shortage Problem" was discussed in an open forum. J. C. Bullard of the Corn Products Refining Company read a prepared statement covering the reasons for the shortage and the prospects for the near future. The entire supply is under government control for use in feeding distressed people in Europe. However, 18 million bushels are being held in storage because of inadequate ocean transportation. These should be made available to industry at once, since if held much longer will not be suitable for such use and serves no good purpose by being withheld. This represents 50% of the present needs and the new crop which looks good will be available by the time that this withheld stock can be shipped. Several comments were made regarding the possible use of substitutes and extenders, none of which are particularly satisfactory.

Sports Events

An interesting feature of the meeting was the opportunity for fishing in the famous lakes of the region. Many experienced fishermen were over the fishing spots at 4 a.m. each day. A few were fairly successful but in general the warm waters had a tendency to drive the salmon and trout to the great depths where the temperature of the water was more to their liking. An outdoor picnic lunch was held on Saturday on the shore of the lake. This was followed by an exhibition of water sports, log rolling, etc., by the Guides Association. In the evening a large number of prizes were given out for fishing, golf and bridge prowess.

Those present included: R. G. Adams, Lawrence R. Adkins, M. S. Anderson, E. M. Archer, E. M. Battey, Norbert Bernheimer, W. E. Brawn, P. D. Bray, J. G. Bullard, W. F. Butcher, W. C. Bauer, Murray H. Bennett, P. S. Bolton, Ivan H. Brandon, Robert C. Brown, R. D. Carter, J. B. Calkin, J. E. Connell, Harry Conner, Lester W. Crouse, Robert A. DeMund, Jr., Frank E. Desmond, Paul A. Donaghy, John Henry Doughty, A. Guy Durgin, Fred S. Gibbs, F. C. Goodwill, A. P. Gregory, Cesar Delgado, Charles H. Drummond, Carl C. von Ende, Richard Estabrook, Frank V. Fearella, O. L. Fournier, Raymond A. Freeman, Frederic Fuller, Theodore H. Geiger, Donald M. Hall, Wadsworth L. Hinds, Charles I. Horton, W. C. Hodgkins, Lyle C. Jenness, Arthur E. Jones, R. E. Kilty, E. L. Lamb, William A. LaPointe, Ross O. Lindsey, John D. Lohnas, Walter L. Maroney, R. G. Macdonald, Henry Mellen, J. C. Mooney, Walter B. Morehouse, Harold S. Morse, T. S. Morse, Hugh H. Morton, K. L. Moses, Clifford M. Myers, R. F. McNett, George S. McKnight, Jr., R. B. Martin, R. C. Marvin, Howard P. Meinchel, Jr., R. C. Mesterman, R. N. Miller, H. A. Morrison, George L. Nystrom, John L. Parsons, Clifford Patch, Henry C. Press, John P. Phelps, Noel R. Phillips, A. E. Regnier, F. J. Reynolds, E. E. Sawyer, James H. Snyder, Walter J. Stearns, W. D. Stroud, F. A. Strovink, Walter J. Sullivan, J. J. Thomas, Wilfred V. Torrey, Paul J. Shirley, Jr., H. P. Waldenmyer, T. J. Waldron, Walter E. Wentworth, V. C. Watters, Frank A. Whitman, R. Cameron Whitney, Roy P. Whitney, Jack Fife Wright, C. J. Yarber.

Paper and Paper Stock Imports At New York and Other Ports

NEW YORK IMPORTS

WEEK ENDING JUNE 29, 1946

SUMMARY

Newsprint .....9,635 rolls
Tracing Cloth .....27 cs.
Decalcomania Paper .....33 cs.
Filter Paper .....20 bls.
Surface Coated Paper .....11 cs.
Rice Paper .....4 cs.
Tissue Paper .....9 cs.

NEWSPRINT

N. Y. Journal American, Markland, Liverpool, N. S., 895 rolls.
N. Y. Tribune, Markland, Liverpool, N. S., 1467 rolls.
World Telegram, Markland, Liverpool, N. S., 605 rolls.
Washington Post, Markland, Liverpool, N. S., 2149 rolls.
Alexandria Gazette, Markland, Liverpool, N. S., 23 rolls.
World Telegram, Stuart Prince, Cornerbrook, N. F., 650 rolls.
N. Y. Sun, Stuart Prince, Cornerbrook, N. F., 238 rolls.
Clinton Paper Corp., Stuart Prince, Cornerbrook, N. F., 424 rolls.
Tenafly Printing Corp., Stuart Prince, Cornerbrook, N. F., 220 rolls.
Hearst Enterprises, Inc., Buckeye State, Three Rivers, Que., 2290 rolls.
H. G. Craig Co., A. C. D., Donnacona, 361 rolls.
International Paper Co., International No. 1, Gatineau, Que., 313 rolls.

TRACING CLOTH

E. Dietzgen & Co., Vasconia, Liverpool, 27 cs. (bleached cotton).

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Vasconia, Liverpool, 33 cs. (duplex).

FILTER PAPER

J. Manheimer, Henry Baldwin, Bordeaux, 20 bls.

SURFACE COATED PAPER

Gevaert Co. of America, Inc., Lillian Nordica, Antwerp, 11 cs.

RICE PAPER

Old Importers, Inc., Red Jacket, Shanghai, 4 cs.

TISSUE PAPER

B. F. Drakenfeld & Co., Vasconia, Liverpool, 9 cs. (gauze and pottery).

RAGS, BAGGINGS, ETC.

Castle & Overton, Inc., Lillian Nordica, Antwerp, 142 bls. dark cotton rags; 17 bls. mixed fustians; 589 bls. rags.
(———), Lillian Nordica, Antwerp, 17 bls. rags.
A. W. Fenton Co., Lillian Nordica, Antwerp, 203 bls. old rags; 231 bls. cotton rags.
E. J. Keller Co., Inc., Lillian Nordica, Antwerp, 638 bls. old rags; 149 bls. rags.
National Vulcanized Fibre Co., Lillian Nordica, Antwerp, 167 bls. rags.
S. Shapiro & Sons, Inc., Lillian Nordica, Antwerp, 182 bls. rags.
Padawer & Co., Red Jacket, Shanghai, 100 bls. cotton waste.
O'Brien Products, Inc., Red Jacket, Shanghai, 100 bls. cotton waste.
S. H. Waldestein, Red Jacket, Shanghai, 100 bls. cotton waste.
Empire Fibre Co., Red Jacket, Shanghai, 200 bls. cotton waste.
Riverside Mills, Red Jacket, Shanghai, 100 bls. cotton waste.
(———), Selma Dan, Havana, 61 bls. cotton waste.
Public National Bank Trust Co., Defoe, Buenos Aires, 62 cotton waste-pickers.
Atlas Waste Co., Selma Dan, Havana, 87 bls. cotton waste.
(———), John H. Thomas, Melbourne, 28 bls. wool rags.
J. A. Manning Paper Co., Inc., C. C. N. Y. Victory, London, 34 bls. paperstock.
E. J. Keller Co., Inc., C. C. N. Y. Victory, London, 32 bls. rags; 40 bls. old scrap jute bagging.
Tradesmans National Bank Trust Co., C. C. N. Y. Victory, London, 54 bls. paperstock.
R. & V. Miller, Inc., Henry B. Brown, Rotterdam via Antwerp, 39 bls. new colored rags.
(———), Vasconia, Liverpool, 25 bls. cotton waste; 154 bls. new wool rags; 22 bls. threadwaste; 8 bls. old wool rags.
Louis Gottlieb & Co., Navarchis Komdouriotis, Alexandria, 51 bls, new cuttings.
E. J. Keller Co., Inc., Navarchis Komdouriotis, Alexandria, 63 bls. old cotton rags; 26 bls. new khaki cuttings.
Robert Blank, Navarchis Komdouriotis, Alexandria, 64 bls. old white cotton rags.
Simmons Co., Ogelthorpe Victory, Santos, 241 bls. cotton linters.
Seldner Corp., Ogelthorpe Victory, Santos, 405 bls. cotton linters.
Schimmel Trading Corp., Ogelthorpe Victory, Santos, 131 bls. cotton linters.

GLUESTOCK, ETC.

H. Remis & Co., Ogelthorpe Victory, Santos, 249 pkgs. gluestock.
J. Gorvers, Cape Borda, Barranquilla, 91 rolls hide cuttings.

CASEIN

C. M. Loeb, Rhoades, Tatra, Buenos Aires, 2000 bags lactic casein.
1st National Bank of Boston, Tatra, Buenos Aires, 2032 bags lactic casein.
Perkins Glue Co., Southwestern Victory, Buenos Aires, 1000 bags lactic casein.
N. Y. Trust Co., Southwestern Victory, Buenos Aires, 2000 bags lactic casein.
Bankers Trust Co., Southwestern Victory, Buenos Aires, 1000 bags ground lactic casein.
Hercules Powder Co., Southwestern Victory, Buenos Aires, 1000 bags lactic casein.
Hercules Powder Co., Defoe, Buenos Aires, 2000 bags lactic casein.

WOODPULP

Pagel Horton & Co., Inc., Abner Nash, Sikea, 1828 bls. strong unbleached sulphite pulp, 304 tons.
Pagel Horton & Co., Inc., Abner Nash, Hernosand, 1523 bls. strong sulphite pulp, 252 tons.
J. Anderson & Co., Abner Nash, Hernosand, 1823 bls. strong sulphite pulp, 304 tons.
Perkins Goodwin & Co., Abner Nash, Hernosand, 914 bls. kraft pulp, 152 tons.

ALBANY IMPORTS

WEEK ENDING JUNE 29, 1946

Pagel Horton & Co., Inc., Abner Nash, Sikea, 16,455 bls. air dry sulphate pulp, 2641 tons.
Cellulose Sales Co., Abner Nash, Sandarne, 4000 bls. air dry sulphate pulp, 800 tons.
Cellulose Sales Co., Abner Nash, Sandarne, 1300 bls. air dry sulphite pulp, 255 tons.
Cellulose Sales Co., Abner Nash, Stugsund, 1525 bls. air dry sulphite pulp, 260 tons.
Bulkley Dunton Pulp Co., Inc., Abner Nash, Stugsund, 2322 bls. dry sulphite pulp, 380 tons.
Brown Bros., Harriman & Co., Abner Nash, Hernosand, 6000 bls. dry sulphite pulp, 1010 tons.
Gottesman & Co., Inc., Abner Nash, Hernosand, 304 bls. strong sulphite pulp, 50 tons.

Exchange Policy Retards Chilean Importations

WASHINGTON, D. C.—Chile's imports of paper products, with the exception of newsprint, were held down to a record low during 1945, chiefly by unwillingness of the exchange control agency to grant exchange for various types of paper products, according to a report to the Department of Commerce. This governmental agency contended that domestic production was more than sufficient to meet the country's demands; that the domestic product was meeting foreign competition in cost and quality; and that the country was not suffering any hardship through lack of such foreign products.

The ban on imports was applied with particular force against paper towels and napkins, cardboard containers, toilet paper, wrapping paper, paper bags, commercial writing paper, letter paper, ledger paper, printed forms such as file cards, index cards, time cards and records, file folders, and similar products. The Chilean market for many lines of paper products will not be promising as long as this policy is continued.

Week's Record of Trends in The Paper and Pulp Market

Office of the PAPER TRADE JOURNAL,
Wednesday, July 3, 1946.

Paper and paperboard output levels are still dependent on waste paper collections and inventories. This has been necessitated by steady inroads in recent months by mills into imported wood pulp inventories as a result of the lag in shipments during the winter months in Northern Europe as well as the absence of price incentives to export from Sweden, and too the inability of trade quarters in this country to determine the volume of wood pulp imports which will be available over the immediate future.

Emphasis on waste paper receipts and the level of domestic wood pulp output has resulted in a general improvement in the supply position in both these categories of fibrous paper raw materials. Waste paper collections and inventories have held at record high levels during 1946, with inventories on June 1 estimated at 400,000 tons. With demand for finished paper and paperboard products still running well ahead of peak supplies, and many uncertainties to be found in the wood pulp import picture, trade quarters voice the opinion that waste paper collections will continue to play an important part in upholding paper production at least for the remainder of the year.

Domestic pulp output has also held up well. Although April output was below March levels, this was attributed to the one-day shorter month and some legal holidays in the producing states. Pulpwood deliveries to mills have been favorable, and receipts for May are expected to show a substantial increase as a result of expected improvement in northwest, lake States and northeast deliveries.

The index of general business activity for the week ended June 22 rose to 132.9 from 131.6 in the previous week, compared with 140.2 for the corresponding week in 1945. The index of paperboard production fell to 163.8 from 164.8 in the previous week, compared with 158.6 for the corresponding week in 1945.

Paper production for the week ended June 22 was estimated at 106.2 percent, compared with 104.0 for the preceding week, with 90.4 for the corresponding week in 1945, with 90.8 for 1944, with 87.0 for 1943, and with 84.5 percent for the corresponding week in 1942.

Paperboard production for the week ended June 22, was 97.0 percent of capacity, compared with 98.0 percent for the preceding week, with 96.0 for the corresponding week in 1945, with 96.0 for 1944, with 96.05 for 1943, and with 72.0 percent for the corresponding week in 1942.

Wood Pulp

Importers have notified several paper and paperboard converting mills that the date of 3rd quarter deliveries was uncertain and could not be guaranteed. While these are not cancellations they do cast some doubt on the ability of some overseas shippers to make good commitments for that quarter. The problem that causes this uncertainty is mainly scarcity of fuel.

Meantime the outlook for domestic production is good, but whether it is enough to provide extra pulp for converting mills is an open question. There will be delays in deliveries of equipment to new and expanded pulp mills as an aftermath of the coal and steel strikes. Thus additional production will be slower in arriving on the market than was expected earlier in the year.

Rags

Removal of imported new cotton, linen and underwear cuttings from Maximum Price Regulation 344 to Maximum Import Price Regulations, effective June 24, should encourage importations on cotton cuttings into the United States so urgently needed by fine paper mills in this country. Under MIPR importers will be able to pay higher prices for cuttings abroad, and will be in a position to compete as purchasers in foreign markets in obtaining cuttings for import into this country. Demand for domestic cotton cuttings continues strong at top prices meanwhile.

Heavy wipers sold this week at $53 to $55; with the usual ratio of three truckloads of classification rags at $29 and $31 for every one of wipers. Foreign dark cottons are not active and deliveries against old orders are slow.

Old Rope and Bagging

Demand for old cordage continues very heavy. All grades except mixed strings suitable only for fibre making are in good demand. Manila is strongest at 5.75c, with demand above supply. Sisal is firm at 4.75c and 4c for smaller sisal. Jute strings range from 5 to 5.50c, with hard jute at 4c to mills. Good mixed strings that can be sorted bring more than the $30 per ton limit.

Bagging market is steadier this week. Mills offered $4.50 delivered for good No. 1 scrap, compared to recent bids at $4.25. Some low grade light weight bagging has been imported at $3.25 to $3.75 dock. Southern mixed bagging continues at $3.50 to $3.75 f.o.b. point of shipment. Northern dealers buy small lots of scrap burlap at $3.50, and $3.75 for larger quantities. Gunny is quoted at $4.50 delivered.

Waste Paper

Mills are absorbing supplies slower this week due to strikes. Demand is reported fair but insufficient to take up all the tonnage offered of some grades. Mixed paper was the grade principally affected, although some backing up of old corrugated, book stock and ledgers was reported. Prices remain at top levels with most mills anxious to maintain the market to encourage collectors to keep supplies at high levels. High grades met ready buyers, more especially hard white shavings and envelope cuttings.

Pennsalt Begins Construction Of Plant at Portland

PORTLAND, Ore.—The Pennsylvania Salt Manufacturing Company of Washington has begun construction of a new $1,000,000 chemical plant on the Willamette River near Portland. Company officials estimated this new unit in the nationwide chain of chemical producing units will be in operation about June 1, 1947.

The new plant, said Fred C. Shaneman, president of the company, and vice-president of the parent company, Pennsylvania Salt Manufacturing Company, Philadelphia, Pa., is being built to serve the increasing industrial activities in this part of the Pacific Northwest.

It will produce liquid chlorine, liquid caustic soda, sodium chlorate, potassium chlorate and sodium hypochlorite. The new unit, which is adjacent to the Company's present Portland facilities, will employ approximately 50 persons, Mr. Shaneman said.

Levey Enlarges Scope of D'Artina's Duties

The Fred'k H. Levey Company, Inc., division of Columbian Carbon Company, has appointed Joseph D'Artina as New York sales manager, effective July 1, 1946. Mr. D'Artina has had over twenty-five years' service with the Levey Company. He was New York branch manufacturing manager for several years and also supervised the technical sales service work. For the last few years Mr. D'Artina has covered the upstate New York territory for the company, and his new duties will comprise the supervision of sales in the northern New Jersey, New York, and New England territories.

Brown Instrument Set May Record

PHILADELPHIA — The largest single month's output of electronic and other industrial instruments in its history is reported for May by the Brown Instrument Company, division of Minneapolis-Honeywell Regulator Company. Precision recording and controlling instruments developed and improved during the war are now being introduced, according to Brown officials.

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CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

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Samples of caps or cores will be gladly submitted

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SUPERCALENDERED BOOK
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Importers of Pulp

BLEACHED AND UNBLEACHED
SULPHITE, KRAFT PULP AND
GROUND WOOD

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 3, 1946.

BLANC FIXE—Market remains active. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton, f. o. b. works.

BLEACHING POWDER—Very heavy demand continues this week. Supply situation is reported favorable although containers are hard to get. Quotations are unchanged. Prices on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots at works.

CASEIN — Current prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 33 cents per pound; 2,000 pounds 33¼ cents per pound; less than 2,000 pounds 33¾ cents per pound, f. o. b. shipping point. Imported, 33 cents per pound.

CAUSTIC SODA—Demand is reported very active. Cutback production reduces stocks. Market tight with demand above output. Solid caustic soda is quoted at $2.30 per 100 pounds; flaked and ground is quoted at $2.70 to $2.95 per 100 pounds.

CHINA CLAY—Moderate demand currently prevails. Quotations remain unchanged. Supply good. Domestic filler clay is currently quoted at from $8.50 to $9 per ton; coating clay is quoted at from $12 to $22 per ton, at mine; Imported clay is quoted at from $22 to $25 per long ton, ship side.

CHLORINE—Market tight with demand strong and inventories lowered. Quotations unchanged. Chlorine is currently quoted at $2.00 to $2.25 per 100 pounds, in single unit tank cars, f. o. b. works.

ROSIN—Demand remains fair to good. "G" gum rosin is quoted at $6.74 per 100 pounds, in barrels, at Savannah; "FF" rosin at $6.70 per 100 pounds, in barrels, at New York; seventy percent gum rosin size at $6.95 per 100 pounds, f. o. b. works.

SALT CAKE—Current heavy demand is reported keeping inventories low. Prices remain unchanged. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f. o. b shipping point.

SODA ASH—Over-all demand continues very active. Market remains tight with demand above output. Orders allocated to equalize distribution. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.95; in paper bags, $1.05; and in barrels $1.35.

STARCH—Market tight with demand exceeding supplies. Previous orders filled. Starch prices continue unchanged. The pearl grade is quoted at $3.72 per 100 pounds; powdered starch at $3.83 per 100 pounds; all prices in bags; car lots, f. o. b. Chicago.

SULPHATE OF ALUMINA—Supply situation good with demand reported active. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.35 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is currently quoted at $1.75 to $2.00 per 100 pounds. in bags, at works.

SULPHUR—Quotations on sulphur continue to conform to prevailing market prices. Demand moderate. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the prices at Gulf Ports is $17.50 per long ton.

TALC—Prices on talc continue unchanged. Demand steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $24 to $30 per ton. All prices in car lots.

MARKET QUOTATIONS

While the trade is adjusting its policies, pending determination of further authority for OPA and its scope, the prices quoted continue under recent formulas. All quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	*$67.00	@	—
Sheets	75.00	@	—

* OPA Maximum Price.

Kraft—per cwt.—Carload Quantities Zone A, Delivered			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—

* OPA Manufacturers' Prices.

Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—

Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—

Paper Towels, Per Case—			
Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—

Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila 35 lb.	6.00	"	7.00

Boards, per ton—			
News	*54.00	@	—
Chip	*54.00	@	—
Sgl. Mla. L1. Chip	*65.00	@	—
White Pat. Coated	*79.00	@	—
Kraft Liners 50 lb.	*74.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items
Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper
Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$15.50
No. 2 Glossy Coated	12.40	"	14.00
No. 3 Glossy Coated	11.60	"	13.25
No. 4 Glossy Coated	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.	9.35	"	10.75
A Grade S. & S. C.	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C.	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers' Prices, Less Freight. Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$94.00
Unbl. Softwood Sulphite	82.00
Bl. Hardwood Sulphite	91.50
Unbl. Hardwood Sulphite	79.50
Bl. Glassine Sulphite	97.00
Unbl. Glassine Sulphite	86.00
N. Bleached Sulphate	94.00
S. Bleached Sulphate	88.00
N. Semi-Bleached Sulphate	89.00
S. Semi-Bleached Sulphate	83.00
N. Unbl. Sulphate	76.00
S. Unbl. Sulphate	69.50
Bl. Soda	84.00
Unbl. Soda	80.00
Groundwood	58.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$12.50
Lake Central	12.50
Southern	15.00
West Coast (in area)	9.50
West Coast (out area)	15.50

	50%-80% Air Dry Weight
Northeast	$10.50
Lake Central	10.50
Southern	13.00
West Coast (in area)	8.50
West Coast (out area)	14.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$7.50
Lake Central	7.50
Southern	10.00
West Coast (in area)	6.50
West Coast (out area)	12.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices

Domestic Rags

New Rags
(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

* OPA Maximum Prices.

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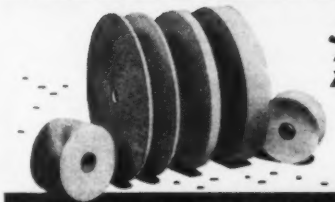

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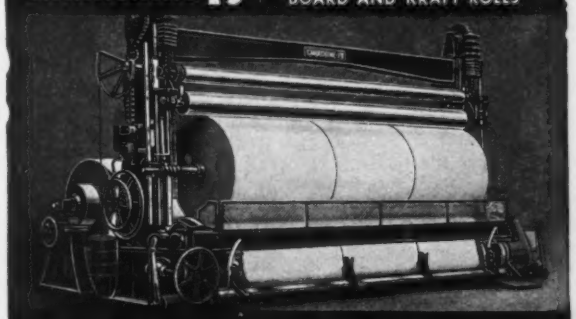

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63 Mill St. Orange, Mass.

Old Rags

White, No. 1—			
Repacked	*3.84	@	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Thirds and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.30	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

Pre-War Quotations
All Prices Nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.25	@	3.30
Wool Tares, light	3.25	"	3.50
Wool Tares, heavy	3.50	"	3.75
Bright Bagging	3.25	"	3.50
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	1.50	"	—

* OPA Maximum Prices.

Old Waste Papers

(F. o. b. New York)
OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.82¼	"	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal
(F. o. b. Mill)

(Soft Fiber)			
Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill)

Shirt Cuttings—	
New White No. 1	.07¼
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable Shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03¼
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¼
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¼

Domestic Rags (Old)

White No. 1—Repacked	3.80	@	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	@	3.50
No. 1 Clean Bright—Sisal Strings	.04	"	—
No. 2 Clean Bright—Sisal Strings	.03	"	—
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)
OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	1.15	"	—

BOSTON

Old Papers

(F. o. b. Boston)
OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	2.75	@	2.90
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	* —	"	4.00
Mixed Rope	1.60	"	—
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.00	"	3.25
South America	—	"	3.25
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	—	"	3.65
New Zealand Wool Pouches	—	"	3.50
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

* OPA Maximum Prices.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.05
New White No. 1	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06¼
Underwear Cutters, Bleached	.06¼	"	.06¾
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¼
New Black Silesias	.03	"	.03¼
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¾
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06½
B. V. D. Cuttings	.06¼	"	.06½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—Repacked	3.88	@	—
Miscellaneous	3.20	"	—
White No. 2—Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—

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Maintain a constant uniform quality of product.
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WANTED—5c a word. Double rate for heavy face type. Minimum charge $1.25.
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All classified advertisements are payable in advance. If box number is used—35 cents additional.
Address replies to advertisements appearing under Box numbers in care of
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Copy for Classified Advertisements must be in our office on Monday preceding publication

HELP WANTED

Wanted Night Superintendent for Specialty Paper Mill, Capable of taking Full Charge. Give age, experience, and salary expected in first letter. Address Box 46-414 care Paper Trade Journal. J-4

PROCESS ENGINEER
Wanted

With wide experience in pulp and paper making processes. Must be able to develop flow diagrams and specify related equipment. Excellent opportunity for the right man. Please furnish complete experience record.
Address Box 46-261 care Paper Trade Journal. TF

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$2,500-$25,000. This thoroughly organized confidential service of 36 years' recognized standing and reputation carries on preliminary negotiations for supervisory, technical and executive positions of the calibre indicated. Retaining fee protected by refund provision, identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.

WANTED—Chief Draftsman—Must be experienced on pulp and paper mill machinery. To take complete charge of drafting room. Give full particulars in first letter. Address Box 46-420 care Paper Trade Journal. J-11

WANTED—Foreman or Superintendent having experience in embossing and embossing machines and methods. Must be able to rebuild, improve and devise. Address Box 46-428 care Paper Trade Journal. A-15

COST ACCOUNTANT WANTED—Paper Mill experience in costing and related work necessary. Send resume of experience, education and salary desired to Box 46-425 care Paper Trade Journal. J-11

ADJUSTER—Experienced, self opening bag machine. Excellent opporunity, good salary and working conditions. Address Box 46-438 care Paper Trade Journal. J-4

WE ARE LOOKING FOR a well introduced travelling SALESMAN calling on SULPHATE and SULPHITE MILLS who would like to add another good article to his line on a commission basis. Regular supplies available. Address Box 46-445 care Paper Trade Journal. J-4

CHEMICAL ENGINEER for applied research and development relating to pulping and papermaking. Especially interested in person thoroughly familiar with pulping technics and from 3 to 5 years experience. Give full details in letter to The Institute of Paper Chemistry, Appleton, Wisconsin. J-18

HELP WANTED

WANTED

We have an opportunity for a man experienced in the conversion of facial tissue, familiar with the Teall folder, Container Equipment gluers and automatic boxers. Salary is entirely dependent upon how valuable you make yourself to us. Permanent, responsible job. Complete history of your experience and preferably a picture with your reply. Vicinity New York City.

Box 46-427 care Paper Trade Journal. A-15

WANTED

2 Machine Tenders and 2 Back Tenders for 104" Fourdrinier Machine making Board, 2 Machine Tenders and 2 Back Tenders for 82" trim, three-cylinder Machine making Board.

Mill planning extensive expansion and reconversion program.

Write to Box No. 46-424 giving experience, references, etc. J-25

WANTED

Long established, nation-wide organization with extensive expansion program under way, is in need of an experienced Tour Boss familiar with Felt Mill operations, to be trained for Assistant Superintendent job at its New Orleans Plant. Exceptional opporunity for right man. Send complete resume giving experience, education, salary desired, etc., to Box 46-435 care Paper Trade Journal. J-4

WANTED

Night Boss for a one machine board mill. Must be experienced in the manufacture of jute liner and container chip. Mill located in the middle west. Address Box 46-429 care Paper Trade Journal. J-4

WANTED — Man familiar with paper stock grades to take charge of the Receiving Dept. of a one-machine mill making the better grades of boxboard. Good salary plus a bonus. Also WANTED Millwrights familiar with board mill operation. Good hourly rate plus bonus. Address Box 46-359 care Paper Trade Journal. • J1-18

WANTED IMMEDIATELY — Experienced kraft pulp mill tour foreman, chemist or chemical engineer and junior chemist for new modern bleached kraft pulp mill. In replying, give experience, personal history and salary expected. Address Box 46-208 care Paper Trade Journal. TF

WANTED—Unusual opportunity for a Bag Machine Adjustor, experienced and capable of operating a small Bag Mill in Latin America. Give details and complete history. Address Box 46-386 care Paper Trade Journal. J-4

WANTED—Experienced Mechanical Draftsman for work in pulp and paper mill located in the Fox River Valley of Wisconsin. Address Box 46-402 care Paper Trade Journal. J-4

WANTED—Alert, Mechinical Engineer, with paper mill experience for sales and engineering work with old established machinery builder. Excellent opportunity for right man. Write Box 46-405 care Paper Trade Journal. J-11

TOUR FOREMAN for fourdrinier specialty paper mill located in Mid-west. Must have technical training. Give full particulars in first leter. Address Box 46-418 care Paper Trade Journal. J-4

WANTED—Night Boss for a one machine board mill. Must be experienced in the manufacture of jute liner and container chip. Mill located in the middle west. Address Box 46-392 care Paper Trade Journal. J-4

HELP WANTED

CHARLES P. RAYMOND SERVICE, INC.
294 Washington St., Boston, Mass.
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Positions Now Open
Technical Directors (Two)
Cost Accountants $4,000—$10,000 year
Manager wax paper converting plant
Night boss cylinder machines
Chemists (Several)
Mechanical engineer $5,000 year
Assistant plant engineer $100—$125 week
Draftsman $80—$90 week
Machine and back tenders

We invite correspondence (strictly confidential) with paper and pulp mill executives seeking new positions and with employers seeking new personnel. J-4

WANTED

Plant Engineer for two Machine Mill, at Wallloomsac, N. Y. Revamping and rebuilding with extensive expansion program under way including Corrugating Box equipment. Experience in Power, Steam, Turbine and paper making required. Do not reply unless qualified. State age, experience and education, salary expected. Wallloomsac Paper Mills, Inc., 25 Vanderbilt Avenue, New York 17, N. Y. J-25

SITUATIONS WANTED

SALES REPRESENTATIVE

Former Army officer, recently discharged, graduate Chemical Engineer and Business Administration, experience chemical and mechanical pulping, book, tissue, and creped wadding manufacture and conversion, desires connection with paper mill or paper industry equipment manufacturer desiring sales or technical service representation in South East. Member TAPPI. Broad acquaintance among Southern manufacturers. Box 46-407 care Paper Trade Journal. J-4

Foreman-machine adjuster or Head-Adjuster on F. L. Smithe L.O. S.O. W.R.W. W.R. U.R. and all types of Plungers for making window and plain envelopes of all sizes and description for the Commercial and High-class social Stationery trades. 20 years of practical experience on the above machinery. Salary must be according to qualifications and experience. I am forty one years of age—married. My service could be available within two weeks or one month from date. Address replies:—

ANTHONY PALMIGIANO, JR.
252 Union Street, Brooklyn 31, New York

N.B. I am also familiar with F & S paper bag and cellophane bag machines. J-4

Graduate engineer, middle thirties, wants position in Southern industry. Planning, estimating, design and construction experience. Maintenance, supervisory and management experience in wood handling, all phases of sulphate pulping, Fourdrinier and cylinder operation lightweight papers to heavy boards. Knowledge of groundwood pulping and wallboard manufacture. Present salary $10,000. Address Box 46-413 care Paper Trade Journal. J-11

MECHANICAL ENGINEER—22 years experience in the pulp, paper and board industry in Engineering and Managing capacities. Operation Power, Maintenance and Construction. Kraft and Sulphite pulping processes. Paper machines and conversion. Thoroughly versed in details, methods and supervision. Capable of taking over with a minimum of orientation time. Invites correspondence. Address Box 46-403 care Paper Trade Journal. J-11

PRACTICAL MASTER MECHANIC and a Paper Maker. Thirty years experience in maintenance, installation, layouts on cylinders and fourdrinier equipment. Making kraft, board, tissue, waterleaf, parchment and rag stock. Desire a permanent connection. Address Box 46-400 care Paper Trade Journal. J-11

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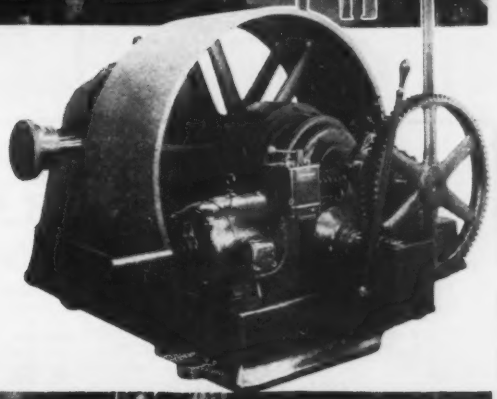
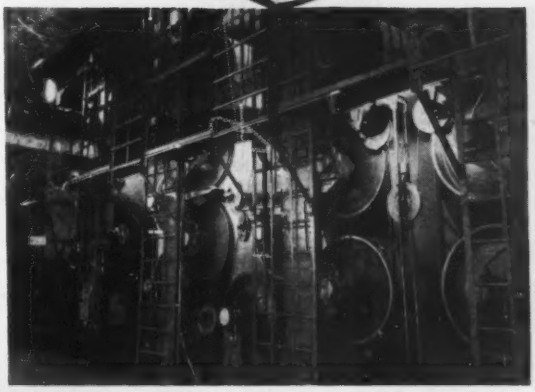


Makes a good slogan . . . for "safety" should come first in every mill. B-C herewith hands you a few Safety-First suggestions well worth considering:

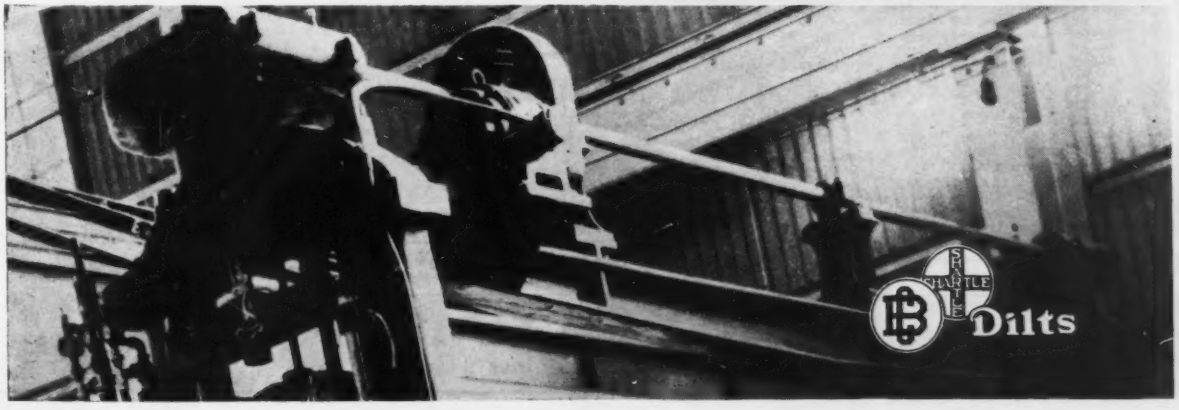
1. *Install a B-C Sheehan carrier*—First, to protect the men; second, to save time and reduce broke.
2. *Install a B-C electric calender lift*—First, to reduce the hazard; second, to facilitate raising of the rolls for cleanup.
3. *Install a B-C dryer inching drive*—First, to provide greater safety; second, to back up your dryers.
4. *Install a B-C calender reversing drive*—First, to eliminate danger; second, to speed plug ejection and reduce broke.



Not only will such equipment afford needed protection—it will also save time, cut down on broke, and gradually pay for itself.

THE BLACK-CLAWSON COMPANY, Hamilton, Ohio

Divisions: Shartle Bros. Machine Co., Middletown, Ohio
Dilts Machine Works, Fulton, N. Y.
Associate: Alexander Fleck Limited, Ottawa, Canada



SITUATIONS WANTED

SUPERINTENDENT—Practical Paper Maker on cylinder products with engineering background. Can modernize or remodel your mill for greater flexibility to improve quality and quantity. Address Box 46-404 care Paper Trade Journal. J-4

SUPERVISION, Finishing Dept. or Paper Converting Plant. Years diversified experience, Sheeting, Rewinding, Cutting, etc. Proficient operator and instructor, varied packing, Clerical, Scheduling, Shipping. Address Box 46-401 care Paper Trade Journal. J-4

CHEMICAL ENGINEER—Graduate pulp and paper technology. Interested in research development in paper or allied field; liaison work between laboratory and manufacturing departments or consumers. Age 31. Address Box 46-409 care Paper Trade Journal. J-4

MILL REPRESENTATIVE covering the jobbing and direct trade for the past 15 years from Pennsylvania through to the Carolinas, now desires to operate over the same territories with 2 or 3 non-conflicting lines. What have you to offer? Address Box 46-412 care Paper Trade Journal. TF

WANTED—Position as Plant Manager or Superintendent, by a good practical Papermaker. Many years experience on light weight papers, Napkins, Toilets and Twisting Papers. Fourdrinier and Cylinder machines. Capable of taking complete charge. Address Box 46-426 care Paper Trade Journal. J-4

SITUATIONS WANTED

SUCCESSFUL SALESMAN with wide experience in coarse paper products desires connection with reputable wholesale firm, or mill for Philadelphia and vicinity. Highest references as to character and ability. Address Box 46-437 care Paper Trade Journal. J-4

WANTED — Position as Chief Engineer — 18 years of experience in Power Plant operation, heat balance and Plant efficiency. Age 40. Best of references. Address Box 46-449 care Paper Trade Journal. J-18

CHEMIST—17 years in productive pulp and paper research. Desires position in charge of development, or as technical director. Present salary $4800. Address Box 46-448 care Paper Trade Journal. J-11

FOR SALE

FOR SALE

2—Valley Iron Screw Presses
2—Fletcher Bleachers
1—Frederick Centrifugal pump, 8" SSV, 1400 GPM
1—Shartle 15" BI Centrifugal pump, 5300 GPM

SHARTLE BROS. MACHINE CO.
Middletown, Ohio J-4

FOR SALE

FOR SALE

8—New Shartle iron tub beaters with rolls 80" dia., 55" face, anti-friction bearings, stainless steel hoods, ideal for broke beaters, batch breakers or washers, capacity about 4000#.

Osborne Paper Mill Equipment Co.
Fulton, N. Y. TF

FOR SALE

COMPLETE OPERATING BOARD MILL

6 cylinder machine producing 28 tons per day. Can be inspected in operation.

Address Box 45-451 care Paper Trade Journal. J-4

FOR SALE—110" Hamblet heavy duty Sheeter with Slitters and four roll back stand. Of modern vintage—fine for any mill where a powerful sheeter of this size is needed. Thomas W. Hall Co., Inc., Stamford, Conn. J-4

FOR SALE—6 New Unused Natural Stones for Carthage 3 Pocket Grinder. 32" face, 56" diameter, 2X Grade. Fort Howard Paper Company, Green Bay, Wisconsin. J-18

FOR SALE

COMPLETE 92" SINGLE CYLINDER PAPER MACHINE

BEATERS
1—2000 lb. Holyoke-Iron Tub Beater.
2—1200 lb. E. D. Jones (no tubs).
1—1000 lb. Dayton Beater (no tub).
1—1000 lb. Stout & Mills Iron Tub Beater.
1—400 lb. Gavit—iron tub beater.
1—Breaker Beater—Dilts Bandless Roll 62" diameter x 54" face—70 tons daily capacity. Equipped with Shartle Bros. Ragger.

CALENDER STACKS
1—5 roll 84" face—Farrel.
1—6 roll—72" face.
1—7-roll 36" Holyoke Machine. (supercalender)

CENTRAP
1—Shartle Brothers Centrap.

CENTRIFINERS
5—Bird Centrifiners, including motors and starters.

COATING MACHINE
1—26" six roll coating machine.

CYLINDER MOULDS
2—30" diameter x 74" face.
2—30" diameter x 54" face.
1—30" diameter x 75" face.
1—36" diameter x 84" face.

DRIVES
4—Smith & Winchester Drives.
1—Moore & White mortise gear drive.
1—D. O. James 75 H.P. Speed Reducer with couplings and motor base. Ratio 2.16 to 1. 990 RPM to 418 RPM.

DRYERS
2—8' diameter x 175" face.
1—48" diameter x 60" face, anti-friction bearings. Creping dryer.
1—48" diameter x 94" face.
1—24" diameter x 84" face. (Baby)
2—36" diameter x 64" face, with frames gears and bearings.
2—25" x 120" (Baby Dryers).
2—30" x 120".
1—48" x 100".
11—30" x 80". (Steel Dryers).
5—24" x 76". (Steel Dryers).
2—36" diameter x 38" face.

ERKENSATORS
2—I. W. E. Erkensators—bronze construction—complete with motors, starters and distributing box.

FLAT SCREENS
1—12 plate Murray Dunbar Flat Screen.
1—4 plate Flat Screen.

JORDANS
1—Noble & Wood Monarch, anti-friction bearings, direct connected to 125 h.p. synchronous motor.
1—No. 2 Miami Jordan.
1—No. 9 Emerson Jordan—for direct connection to a motor.
1—Noble and Wood, Monarch, new fillings.

LABORATORY EQUIPMENT
1—Mullen Tester.

MOTORS
1—125 h.p. synchronous motor—including starting equipment. (450 r.p.m.)
1—25 h.p. motor, including starting equipment.

PRESS ROLLS (Rubber Covered)
1—27½" diameter x 186" face.
1—26" diameter x 185" face.

PULP EQUIPMENT
1—14' Globe Rotary Digester.
1—84" Carthage Chipper (Four Knives).
1—32" three pocket Glens Falls Grinder (for 27" wood).

PULP SCREEN
1—IMPCO centrifugal pulp screen design No. 3.

PULPER
1—Jones Pulper.

PUMPS
1—10 x 11 Connersville Vacuum Pump.
1—10 x 7½ Connersville Vacuum Pump.
1—No. 4 Connersville Vacuum Pump.
1—6 x 2L Connersville Vacuum Pump.
1—No. 7 Sturtevant Vacuum Pump.
1—Buffalo Pump—5500 g.p.m. direct connected to 100 H.P. Motor (50' head).
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

RAG CUTTER
1—Taylor Stiles, 14", Little Giant.

REELS
1—72" Downingtown Expansion Reel.
1—2 Bowl Reel — 112" face — bowls 20" diameter.
1—2 Bowl Reel—110" face.
1—Set Stack Reels, capacity trim 143".

ROLLS
500—Brass tube—steel tube—rubber covered iron rolls—various sizes.

SAVEALL
1—Saveall 36" diameter x 96" face cylinder mold. (With iron end vat.)
1—Saveall 36" diameter x 96" face cylinder mold. (With wood vat.)

SCREW PRESS
1—Valley Iron Screw Press.

SCREEN PLATES
36 plates—43 x 11 5/8"—.050 cut—bevel edges.
24 plates—Recently recut .008.
12 plates—Recently recut .035.
Also other sizes and cuts in stock.

SHREDDERS
1—No. 25 CRSE Mitts & Merrill Hog.
1—Gilman Shredder.
1—Waterville Shredder.

SHEETERS
1—84" Finlay Sheeter, Erie Layboy and 9 roll backstand.
1—128" Moore & White Sheeter with layboy.
1—48" Langston heavy duty chopper (this is a combination machine, combining a slitter, scorer, sheeter and chopper.)

SLITTERS AND WINDERS
1—108" Warren Winder.
1—36" Beck Razor Blade type Slitter & Winder.
1—42" Wilson Slitter and Winder.
1—110" Beloit slitter (slitter attachment only).
1—60" Moore & White Slitter and Winder set for 5/8" slits.
1—60" Moore & White Slitter and Winder set for 7/16" slits.
1—120" Moore & White 4 drum slitter.
1—80" 2 drum Warren Winder.

STOCK PULPS
1—12 x 20 Triplex Shartle.
1—10 x 20 Duplex Shartle Brothers.
1—10 x 12 open impeller. (All lead).
1—8 x 18 Downingtown Duplex.
Numerous other Centrifugal Stock Pumps. Advise as to your requirements.

SUCTION BOXES
1—Nash 100" face Suction Box.
1—Brass Suction Box—96".

V-BELT DRIVES
1—{23" diameter x 14" face, 10 grooves.
{15" diameter x 14" face, 10 grooves.
1—{32" diameter x 21¾" face, 15 grooves.
{14¾" diameter x 21¾" face, 15 grooves.

WET MACHINE
1—74" Moore & White.

We are always in the market to purchase your surplus or idle machinery. What have you to offer?
Wanted Cylinder and Fourdrinier Machines (complete mills).

J. J. ROSS COMPANY

250 Frelinghuysen Ave. **Tel.—Bigelow 3-3720** **Newark 5, N. J.**

TELEPHONE
HUMBOLDT 2-2177

CABLE ADDRESS: JACK ROSS

ROSS PAPER MACHINERY CO.

265 PASSAIC STREET
NEWARK 4, N. J.

CONVERTING
PAPER MAKING EQUIPMENT

NEW, USED, REBUILT
PAPER AND PULP MACHINERY

PURCHASED FROM THE UNITED STATES NAVY

18—Worthington Close Coupled Centrifugal Pumps. 6" x 6" 650 g.p.m. 25' head. 6 h.p. Star Electric splash proof motor. 1750 r.p.m. 440 volt, 3 ph.-60 cycle, ball bearing.

16—Warren Vertical Pumps. 6" suction. 3" discharge. 135 g.p.m. 80' head. Direct Connected 6 h.p. General Electric Motor. 1750 r.p.m. 440 volts, 3 ph.-60 cycle, ball bearing.

1—Warren Close Coupled Centrifugal Pump. 3" suction. 2" discharge. 60 g.p.m. 90' head. 6 h.p. General Electric 1750 r.p.m. 440 volts, 3 ph-60 cycle, ball bearing. All the above pumps and motors are in excellent condition and are of bronze construction.

2—Worthington 3". 2 stage, 200 g.p.m. 224' head. Bronze Ball Bearings.

AIR HOISTS
2—Two-Ton Ingersoll Rand
2—Five-Ton Ingersoll Rand

ATTRITION MILL
1—Sprout Waldron direct connected to two 20 H.P. motors—3 phase—60 cycle—440 volts.

BEATERS
2—1800 lb. Herne Iron Tub.
1—1200 lb. Holyoke Wood Tub.
4—Valley Iron 750 lbs. Iron Tub Beaters, with Silent Link Belt Drive.

BIRD SCREEN PLATE
28 Plate—60 cut. New condition.

BLOWERS
1—American ball bearing blower, size 17" x 23" for motor drive.
1—American Blower, size 40. For belt drive.

CALENDER DOCTORS
1 set of 16 Warren Doctors 104" face with frames.

CALENDER ROLLS
30 rolls various sizes

CALENDER STACKS
1—6 roll Beloit, 110" face.
2—2 roll Holyoke 38" face.
1—9 roll Moore & White—82" face.

CONVERTING EQUIPMENT
4—Sanitary Napkin Machines. With motors and starters.
1—Bliss Double Head Stitcher.
4—Waterville Grinders.
1—36" Waldron Reeling Machine.
1—39" Dampening Machine.
1—38" Brush Coating Machine.
1—Copper Mixing Tank with agitator—40 gal.
1—Cast Iron Kettle 20" x 24" 2 outlets.

CREPING MACHINE
1—Complete Bagley & Sewall Creping Machine. Dryer 100" face x 48" diameter. Ball bearing equipped. Used 6 months.

CYLINDER MOLDS
2—Impco—84" face—40" diameter with stainless steel face wire
2—110" face x 36" dia.
1—90" face x 36" diameter—with ball bearings and cast iron end vats.
6—84" face x 36" diameter.
4—Cylinder Molds—cast iron end vats—cylinders 120" face x 36" diameter. Ball bearing.

DANDY ROLLS
2—122" face 10" dia.
1—138" face 12" dia.
1—129" face 9½" dia.

DRIVES
1—Falk 25 h.p.—7.5 to 1.—1750 r.p.m.

DRYER DOCTORS
40—Warren Doctors. Various sizes.

DRYERS
1—38" diameter x 102" face with bearings
36—28" diam. 96" face 2 deck frames Beloit.
82—48" Dia. x 46" Face, Chromium Plated.
2—24" Dia. x 46" Face.
4—48" diameter x 70" face.

ELECTRIC HOIST
1—Sprague Electric 3 ton hoist—5 h.p. 3 phase —60 cycle—110 volts.

FLAT SCREENS
2—14 plate Union Screen Company
1—8 plate Sandy Hill Packer—roller shoes.
1—10 plate Packer screen with scraper.

FOURDRINIER SHAKES
2—Beloit Fourdrinier Shakes.
1—Sandy Hill Bertram Shake. Late type.

FOURDRINIER WET END
1—120" Beloit Fourdrinier Wet End.
1—74" Pusey & Jones Wet End.

GRANITE ROLLS
2—112" face 20" diameter.

HAMMERMILLS
1—American Hammermill—37" anti friction bearing equipped.
1—Jeffrey Swing Hammer size 18"x24"—Type A.
1—Williams 18" Hammermill Ball Bearing.

HOG
1—Mitts & Merrill Hog. Number 5Z52.

JORDANS
2—E. D. Jones Majestic Jordans, with one new set of fillings for both plugs and shell—belt driven.
2—#2 Miami Jordans—motor driven.
1—Noble & Wood Pony—belt driven.

MISCELLANEOUS
2—Nugent Oil Filters (new).
1 Shartle Brothers cast iron Riffler or Settling Trough. 72' long, 6'7" wide.

MOTORS
1—Westinghouse 200 h.p.—285 r.p.m.—440 volts —3 phase—60 cycle.

PLATERS
2—Holyoke 2 Roll 18" dia. 38" face.

PULLEYS
60—Cone Split and Solid Cast Iron Pulleys. Various Sizes.

PULP EQUIPMENT
1—Economy Electric Pulp Baler.
1—Carthage 4 pocket 27" grinder. Ball bearing equipment
1—126" face Kamyr Press.
1—84" Sumner Disc Barker with motor.

PULPERS
1—Sturtevant Bale Pulper with conveyor & motors used three years.
1—Voith Pulper 20 tons cap.

PUMPS
4—Worthington Pumps 10,000 g.p.m.—35' head. Requires 75 h.p. at 550 r.p.m.
1—DeLaval 6" x 6".
1—DeLaval 1800 g.p.m. 30' Head, 500 r.p.m.—8" Suction—10" Discharge, Ball Bearing—Belt Driven—or for Direct Connection to Motor. Open Impeller.
1—Warren Open Impeller—6" Suction—18" Discharge—Ball Bearing—200 g.p.m., 265' Head —1750 r.p.m. for Direct Connection to Motor.
2—Warren Double Suction Ball Bearing. 6" Suction—14" Discharge—900 g.p.m., 250' Head—1150 r.p.m.
4—Pusey & Jones Open Impeller, 10" Stock Pumps, Belt Driven.
2—8" Pusey & Jones Open Impeller Stock Pumps, Belt Driven.
1—Worthington 400 g.p.m. 35' head 1750 r.p.m. Ball bearing.
1—15" Buffalo—4000 g.p.m.—70' head. For direct connection to motor.
2—New Domestic Pump Co. Ball bearing. 2100 g.p.m.—28' head—10" suction—8" discharge—open impeller. Base and coupling for direct connection to motor.
2—La Bour Company self priming ball bearing pumps. 2½" suction, 2½" discharge. 150 g.p.m.—30" head with extended base for motor.
1—Domestic Pump ball bearing—250 g.p.m., 4" suction, 3" discharge—30' head with extended base for motor.
1—Marlo ball bearing pump—420 g.p.m.—100' head, 4½" suction, 3" discharge. With extended base for motor.
2—Domestic ball bearing pumps—240 g.p.m.—40' head—4" suction—4" discharge. With extended base for motor.
1—Domestic ball bearing pump—1400 g.p.m.—28' head—8" suction—8" discharge. With extended base for motor.
1—Midwest—1000 g.p.m.—180' head—6" suction—6" discharge for motor for pulley drive.

REELS
1—2-bowl 100" face 20" dia. bowls.
1—Black-Clawson 2 Bowl—120" face. Takes 60" diameter roll.

REFINERS
2—#1 Claflin Refiners. Bronze construction.

ROLLS
40—Table, Dress, Felt, Wire, Breast and Calender Rolls. Various Sizes.

ROTARY DUSTERS
2—E. D. Jones Steel cage down draft dusters (wing type). 48" diameter—14'6" long.

ROTARY SCREENS
2—#2A Bird with copper vats.
2—#2 Bird with copper vats.
2—#1 Bird with steel vats, lead lined.
4—Moore & White.

RUBBER COUCH
1—82" face x 18" diameter.

RUBBER PRESS ROLLS
1—185" Face—26" Diameter } Used 20 Days
1—186" Face—27½" Diameter }
1—119" Face—19½" Diameter.
1—109" Face—17½" Diameter.
1—129" Face—19" Diameter.
1—118" Face—18" Diameter.
1—120" Face—18" Diameter.
1—107" Face—18" Diameter.
1—108" Face—18¼" Diameter.

SAVEALLS
1—A. D. Wood cylinder 48" dia. 60" face.
1—Dorr Company No. 40 ADKA Saveall 340-440 GPM. Used 1 month.

SCREW PRESS
1—Valley Iron Screw Press. Used 2 years.

SHEETERS
1—90" Beloit Single Knife heavy duty.

SHREDDERS
2—24" Sprout Waldron heavy duty shredders—anti friction bearing equipped.
1—Taylor Stiles Portable Pulp Shredder.

SLITTERS AND WINDERS
82" Warren two drum—fully rebuilt.
1—41" Waldron Slitter and rewinder. Roll embossing attachment.

SILL PLATE—CAST IRON
300 Ft. 12" wide 1" thick.

STUFF PUMPS
1—10" x 20" Shartle triplex.
1—12" x 20" Shartle triplex.
2—4" x 10" Shartle Duplex direct connected to 3 h.p. gear head motors.

SUPERCALENDER STACKS
1—7 roll Norwood 72" face; 4 paper and 3 iron rolls. 1 new spare paper roll.
1—7 roll Norwood 52" face; 3 paper and 4 iron rolls. 1 new spare paper roll.
1—9 roll Norwood 83" face. Bottom roll 24" diameter. Top roll 20" diameter.

TRIMMER
1—63" Seybold.

TURBINES
2—General Electric Turbine Paper Machine Drive 250 h.p.—350 r.p.m. 125 lb. steam pressure 30 lb back pressure.

UNWINDERS
1—42" John Waldron Unwinder. Used 1 year.

VACUUM PUMPS
1—14" x 20" Connersville.
1—#1 Nash—for direct connection to motor.

WASHERS (Beaters)
1—54" face—45" diam. with rigging. New.

WET MACHINES
1—70" Pusey & Jones Cylinder Mould, 78" face —36" diameter with rubber couch, 18" dia.

THE ABOVE IS A PARTIAL LIST OF EQUIPMENT OFFERED FOR SALE.

AMERICA'S LARGEST BUYERS OF PAPER MAKING MACHINERY

We buy single items to complete Pulp and Paper Mills.

FOR SALE

FRANK H. DAVIS CO.,
ESTABLISHED 1889

USED AND REBUILT PAPER MACHINERY.

FOR SALE

1—110" four drum Moore & White winder with slitter part, 15" diameter drums, winds 60" diameter roll, excellent condition.
6—12 plate Packer Screens.
2—Forced draft Buffalo fans, size 6½.
2—2800 lb. iron tub broke beaters.

PULPERS

1—E. D. Jones Pulper, No. 21, direct connected through Falk reducer to 50 HP induction motor, type K., G.E. magnetic reversing switch and push button station.

1—Jones Pulper, No. 33, one speed reducer, 40 HP induction motor, reversing switch and push button station.
Both pulpers new in 1938.

SHREDDERS

3—Mitts Merrill No. 15 CF right hand pulp shredders, 36" dia. cylinders, removable shell type bearings, coupled motor drive. One is equipped with 125 HP variable speed motor and controls; one is equipped with motor without the control and one shredder is without motor or control.

KNIFE GRINDER

1—90" Covel and Hanchett knife grinder, size 90 D, purchased new in 1938.

LIFT TRUCK

1—Lewis Shepard Lift Truck, type NHF, model ST, capacity 3500 lbs. Lift 5". Platform 48" x 42". Low 5", high 5". New 1937.

CONVEYOR

1—Alvey Horizontal Carton Conveyor, 98 ft. centers, two strand 3 pitch roller chain, 2¼ x 2¼ x 20 maple flights, 3" on centers.

Builders of

ASPHALT COATING, COMBINING MACHINE, GUMMING AND CREPING MACHINE, ROLL GRINDER

FRANK H. DAVIS COMPANY
175 Richdale Ave., Cambridge, Mass.

One standard Langston tube winder.

1—64" Creping Machine. Creping roll 12" in diameter with doctor blade. Two dryers 36"x64" and rewind.

1—Noble & Wood Pony Jordan with extra plug, 1/16" steel fillings.

1—Beloit 8x18" Duplex Plunger Pump.
1—84" Carthage Machine Co.'s 4-knife Chipper.

1—36x84" Wet Machine Cylinder.

1—Bird Machine Co.'s Pulp Screen.

1—84" Langston shear cut Slitter and Rewinder. Further particulars on request.

3—Lockport flat and square bag machines, making bags from 2 to 16 lbs.

1—Noble & Wood 100 lb. Experimental Beater.

1—Complete outfit for making twisting papers, six 36 spindle Brownell Twisters, 3 Universal Winders and 30" wide Fales Slitter.

GIBBS-BROWER COMPANY, INC.
21 East 40th St., New York 16, N. Y.
TF

FOR SALE

REVAMPING AND REBUILDING MILL AND CAN OFFER FOR SALE

1—Noble & Wood Mammoth Jr. Jordan ¼" Filling. Now operating.
1—4000# Capacity motor driven freight elevator with automatic stop control—can be inspected in operation at our plant.
1—6" Lawrence Centrifugal Water pump.
1—Buffalo Centrifugal Stock Pump—8".
2—8" Barnes Centrifugal Sewage Pumps.
8—100" Screen plates for No. 2-A Bird Screen. Slots, .022—never used after being recut once.
1—Rubber covered press roll 12" diameter by 68" face—Journals 5" diameter by 7¼" long.
1—Rubber covered press roll 12" diameter by 84½" face—Journals 5" diameter by 7¼" long.
1—20" face cast iron tapered pulley—2-15/16" Bore, Taper 31"—29½".
2—20" face cast iron tapered pulley—3-7/16 Bore, Taper 31"—30".
1—24" face cast iron tapered pulley—3-7/16" Bore, Taper 31½"—29⅝".
2—Steel split pulleys 60" diameter by 31" face —5-15/16" bore.
1—Cast iron split pulley—60" diameter by 21" face by 3½ bore.
1—Cast iron split pulley—40½" diameter by 21" face by 3½ bore.
1—Cast iron split pulley—84" diameter by 36" face by 5-15/16" bore.
1—Solid cast iron split pulley—72" diameter by 16" face by 16" face by 8⅜" bore.
2—Steel split pulleys—60" diameter by 31" face by 5-15/16" bore.
1—Paper pulley—24" diameter by 21" face by 4½" bore.
1—Tapered cast iron split pulley. Taper 30" to 28½" by 20" face by 3-15/16" bore.
1—30" x 90" Cylinder Mould—7" diameter shaft inside cylinder.
1—9½" Diameter x 85" Face Rubber—covered squeeze or wringer roll—Journals 1-15/16" diameter.
1—9" Diameter x 88" Face Calender roll—5" diameter journals.
12—6½" Dia. x 92" face steel dryer felt rolls with 1-7/16" x 6½" Journals.
2—4" Gould centrifugal stock pumps with 2 vane open impeller. Capacity 600 G.P.M. at 40' head—1175 R.P.M. with 10 H.P. Operated less than two years
2—Pair Noble & Wood lighter stands complete with lighter beams and bearings for 8" diameter journal beater roll.

A visit to the mill would prove profitable as we have many items for sale too numerous to mention. See our superintendent, Mr. O. P. Fussell at our plant in Walloomsac, New York.

WALLOOMSAC PAPER MILLS, INC.
MILLS: Walloomsac, New York
MAIN OFFICE: 25 Vanderbilt Avenue
New York 17, N. Y. TF

MACHINERY FOR SALE

COATER

1—27" paper coating machine (experimental) 11" dia. x 27" coating cylinder, 20 x 3" pulley drive.

DIE CUTTER

1—power die cutter 19 x 42" head, geared drive.
8' 2½" single leather belting .45 perforated metal belt guard.

AMERICAN LAUNDRY EXTRACTOR

1—20" under driven extractor. 26' 3" double leather belting 1.08. 1 dip truck and basket.

DRYING OVEN

1—cellulose paper drying oven 5 x 11 x 7' high galv. iron, 2 pair hinged doors, galv. iron vent pipe, 1 Modine heating unit, complete, including 2 sprinkler heads, steam pipe.
Address Box 46-310 care Paper Trade Journal. **TF**

FOR SALE

2—new Black-Clawson 12 x 8 open impeller fan pumps.
2—new Nash K7 vacuum pumps.

SHARTLE BROS. MACHINE CO.
Middletown, Ohio J-4

FOR SALE—Sheridan 20 x 22 four post Embosser, with A.C. motor and heating elements. Excellent condition. Address Box 46-442 care Paper Trade Journal. J-4

FOR SALE

FOR SALE

1—84" Wet machine with felts
1—Railroad Duster
1—Seybold 63" Cutter
1—Economy Pulp Baler
2—Rag Beaters complete with new 3" Cypress tubs

All equipment can be inspected on premises. Subject to prior sale. Address Box 46-399 care Paper Trade Journal. J-4

FOR SALE

1 Hamilton-Corliss Engine #3066, 16x30 E, Right Hand, 110 lbs. initial steam pressure. Atmospheric exhaust, 110 R.P.M., 180 I.H.P. at 25% cut off, 26 lbs. steam per I.H.P. hour. Good condition.

THE WRENN PAPER COMPANY
Middletown, Ohio J-4

FOR SALE

1—Valley Iron Works Pulper, with motor Capacity 1000# per hour
1—84" 4 knife chipper
1—No. 1 A Bird screen, .014 cut plates
2—6 plates screens (Sandy Hill)
3—10 plate Waterous screens
1—2L Connersville vacuum pump
1—8 x 10 Connersville vacuum pump
1—72" Wet machine (Good condition)
1—84" Heavy duty Hamblet cutter

FRANK P. LYDEN, FORT EDWARD, N. Y.
J-18

FOR SALE

1—variable speed, type G, Terry turbine, good for 250# pressure and up to 350# back pressure. Oil pressure regulator maximum R.P.M. 3850, maximum R.P.M. reducing gear 655. Now operating at 135# pressure but can go to 250#.

SHARTLE BROS. MACHINE CO.
Middletown, Ohio
J-4

FOR SALE

New brass covered felt or wire rolls 6⅝" dia., 84 to 120" face. These are made from government surplus and are new in all respects.

Osborne Paper Mill Equipment Co.
Fulton, N. Y. TF

FOR SALE

Rubber Covered Couch Rolls
2—88" face 20" dia. New rubber, never used.
1—99" face 18" dia. New rubber, never used.
1—75" face 15" dia. New covering.
3—87" face 15¼" dia. Newly ground, 1½" good rubber.
2—48" face 15" dia. Newly ground, about 1" good soft rubber.

OSBORNE PAPER MILL EQUIPMENT CO.
FULTON, N. Y. J-4

FOR SALE

1—8 x 10 Connersville vacuum pump, just removed from 5 flat boxes on news machine.
1—2 L Connersville vacuum pump, just removed from suction box first felt, on same machine as above.
Both pumps in good condition.

FRANK P. LYDEN, FORT EDWARD, N. Y.
J-11

FOR SALE | FOR SALE | FOR SALE

TARENTUM PRODUCTS CORP.

TARENTUM, PENNSYLVANIA

1—Majestic Jordan #A-235, complete with new filling, 3/16" tackle, No. 6 Fast Jordan Coupling, and following drive:
1 Westinghouse Induction Motor type CS 375 HP 2300 V 3 ph 60 cy 97 amp. 380 RPM Ser. #1463196, complete with one control panel, including one Westinghouse 300 amp. Oil Circuit Panel.
1 set Disconnect Switches.

1—Westinghouse DC Motor 75 HP 230 V 265 Amp 575 RPM Frame 183 Serial #4778560. Complete with starting control, circuit breaker and meter.

1—Elliott Water Pump, capacity 500 gallons per minute. Serial #37075. Direct connected to one G.E. Motor 25 HP DC Type CD 85-230 91.3 amps 1750 RPM Ser. #1530365. Complete with one starting control and switch.

1—Westinghouse Generator 70 KW 250 V DC 280 amp. 375 RPM Ser. #345451, with one Field Rheostat, one two-pole circuit breaker 600 amp., one Westinghouse 500 amp. ameter and shunt. This Generator driven by Buckeye Steam Engine, 100 lbs. steam pressure engine #5156.

1—2000 KW A.C. Turbine Generator complete with all accessories.

1—Allis-Chalmers Induction Motor 250 HP 870 RPM 2200 V 3 ph 60 cy 59 amp Serial #2K13568.1.

1—G.E. Induction Motor type KT 326-6-25-1200 Form B 3 ph 60 cy 220 V 25 HP 61 amp. 1200 RPM Ser. #1053934 complete with one G.E. Oil Switch Type F Form K20 80 amp. 600 V Ser. #368400.

1—G.E. Starting Compensator CR 1034 220 V 3 ph 60 cy Type NR 1622.

1—G.E. Induction Motor (slipring) Frame 15A 150 HP Form M 720 RPM 2200 V 3 ph 60 cy 36 amp. Ser. #1180132.

1—G.E. Induction Motor (slipring) Frame 15A 150 HP Form M 720 RPM 2200 V 3 ph 60 cy 36 amp.

1—Westinghouse 30 HP D.C. Motor 220 V 117 amp. 975 RPM Ser. #233501.

1—G.E. Motor DC Type MP Form H 20 HP 1025 RPM 220 V 70 amp. Ser. #19880, complete with manual starting equipment.

1—104" Sheet Cutter complete with stands for 10 rolls and layboy.

1—G.E. Motor DC Type RC30 Form A 15 HP 850 RPM 230 V 53.5 amp. Ser. #957750, complete with variable speed control for armature and field.

1—G.E. Motor DC 7.5 HP 230 V 30.2 amp. 850 RPM Type RC-29A Form A29 Ser. #1145541.

1—G.E. Motor DC 10 HP 230 V 375.1 amp. 850 RPM Type RC 29 Form A29 Ser. #1148660.

1—Westinghouse DC Motor type S 5 HP 220 V 21 amp. 1300 RPM Ser. #112692.

1—G.E. Motor DC 35 HP 129 amp 230 V 700 RPM DLC 202 Form A Compound Ser. #434542, complete with starting control.

1—G.E. Induction Motor (slipring) Type IE 13AA-4-150-1800 Form M 3 ph 60 cy 2200 V 150 HP 34.5 amp 1745 RPM Ser. #3884576 complete with panel. One G.E. Switch Panel Type ATI 59008, one Drum Controller and Resistance, variable speed.

1—Allis-Chalmers DC Motor 10 HP 220 V 500 RPM #38637.

1—Commercial DC Motor 10 HP 230 V 40 amp 730 RPM Ser. #3609, complete with variable control.

1—Master Electric Worthington Pump and Motor. Pump is good for 100 gal. per minute 5 HP motor 230 V DC 3425 RPM Ser. #CC-3495.

1—Robbins & Myers Hoist ½ HP 230 V DC 400 RPM Ser. #M7130SKH.

1—Master Electric Gear Head Motor 1 HP 230 V DC 1725 RPM Ser. #CE863.

1—Shepard Liftabout Electric Hoist 2,000 lb. capacity 230 V DC Ser. #11339.

1—Wright Electric Hoist 1,000 lb. capacity 230 V DC 1200 RPM Ser. #27668.

3—ILG Ventilating Fans ¼ HP 230 V DC 855 RPM.

2—G.E. CP 27 Compressor Head Air Pumps 230 V DC Complete with pressure line switches.

1—Allis-Chalmers DC Motor 5 HP 220 V 1050 RPM Ser. #44037.

1—Westinghouse DC Motor 10 HP 40 amp 230 V 1725 RPM Frame 60L Ser. #143833.

1—G.E. Motor DC Type C-27-B Form A112 10 HP 37.5 amp 230 V 1750 RPM Ser. #1454993, complete with control.

1—Cameron #10A Rewinder #36836, trim 44".

1—Cameron #10 Rewinder #30272, trim 64".

1—Daniels Rag Cutter #2.

1—Horizontal Rotary Digester 7' dia. 22' long, with gearing reduction.

1—Horizontal Rotary Digester 8' dia., 20' long, with gearing reduction.

1—Bucket type conveyor elevator. Buckets size 5" x 17", approximately 48' long, lifts on incline approx. 15'. All steel construction with Rex Chain Drive, complete with one Foote Bros. gear reducer type 25W, 43 to 1, Ser. #188052, driven by one G.E. DC Motor type RC27A Form A-38 5 HP 19.1 amp. 230 V 1150 RPM.

1—R40 Reducer, 12 to 1 ratio.

1—Slat Conveyor steel construction 4' wide, 3' high, 42" long, driven by one Jones Spur Gear Reducer, ratio 27 to 1, Ser. #10135. Driven by one Sprag electric DC Motor type LC 10 HP 37.2 amps 230 V 100 RPM Ser. #DL 2005213, complete with sheaves and V-Belt drive, one Westinghouse Automatic Starter.

1—John Waldron Corrugator #711.

1—Thorpe Hydraulic Press complete with 4 steam platen plates 40" x 40", and one Equalizer Pump.

1—Four cylinder Holyoke Duster.

1—Two-color rotary printing press, with various plates and printing rolls. Will handle 30" wide rolls of paper.

1—Heavy Duty Smith & Winchester Tuber #3369, with tuber attachments No. 4052 and No. 4053.

1—Frank A. Jones Tuber No. 1805.

1—Smith & Winchester Bottomer No. 1810, size 1/16 bbl.

1—Smith & Winchester Bottomer No. 3525, size ¼ bbl.

1—Smith & Winchester Bottomer No. 4018, size ½ bbl.

1—Smith & Winchester Valver No. 2245, size ¼ bbl.

1—Printing Press, Cottrell Flat Bed No. 9645, one color.

1—Printing Press, Cottrell Flat Bed No. 9649, one color.

1—Printing Press, Cottrell Rotary, two color.

PAPER MILL EQUIPMENT

For Sale

68" Rice, Barton & Fales Slitter-Rewinder, for use on dry end of paper making machine.
80" Finley mill type Sheeter.
34" Inman shear cut Slitter.
38" White Auto. Power Cutter.
54" Brown & Carver Power Cutter.
14 x 22 John Thomson Presses.

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New and guaranteed used steel pipe and boiler tubing suitable for paper cores and all other purposes. Also, valves, fittings, wood and steel tanks and steel buildings.

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NAT'L. STOCK YARDS,
ST. CLAIR CO., ILL.
IL-25

FOR SALE

1—218 #20 Cameron winder, used about one year.

Box 46-436 care Paper Trade Journal. J-4

FOR SALE — COMPLETE 62" BELOIT LAMINATOR. WILL PASTE UP TO 4 PLYS BOARD FROM ROLLS PRODUCING SHEETS ALL LENGTHS. WITH SLITTERS, MOTOR, REEVES DRIVE, ETC. ADDRESS BOX 46-395 care Paper Trade Journal. J-18

FOR SALE

BREAKER BEATER

Dilts Bandless Roll 62" diameter x 54" face—70 tons daily capacity. Equipped with Shartle Bros. Ragger.

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PAPER COATING MACHINERY—Waxing, Oiling, Gumming, Gluing, Carbon, Laboratory Coating and Treating Machines. High speed New improvement. MAYER MACHINE COMPANY, Inc., 1155 Scottsville Road, Rochester, 11, N. Y. TF

FOR SALE—1 Hamilton-Corliss Variable Speed Twin Engine, size of cylinders 12" x 24". Also Triple-Deck Frames for ninety 36" dryers, any width. The Chesapeake Paperboard Co., Baltimore 30, Md. TF

FOR SALE—Beloit 116" Slitter—3 top slitter brackets no blades—3 bottom slitters complete Thomas Paper Stock Company, 860 West Evergreen Ave., Chicago, 22, Illinois. TF

FOR SALE—8 x 12 Oliver Save-all with vacuum take-off. Filer Fibre Company, Filer City, Mich. J-4

FOR SALE—3 Double Head D-2 Bliss Assembly Stitchers. 3—33" Model RFA Bliss Power Lift Top Stitchers. Equipped with 3 phase, 60 cycle, 440 volt, AC motors. This equipment is in excellent condition. Fort Howard Paper Company, Green Bay, Wisconsin. J-18

FOR SALE—64" Seybold Twentieth Century cutter, guaranteed to be in good working order. Address Box 46-451 care Paper Trade Journal. J-4

FOR SALE—Moore & White Style K.T. Duplex Cutter with one Revolving Duplex Slitter having 94" length of knives and three each top and bottom Slitters on each of two slitter shafts and with a two reel unwinding backstand. Ready for immediate shipment. Theo. Adams, 111 West Washington St., Chicago, 2, Ill. A-29

FOR SALE—One Jones Imperial Jordan with sliding base, plug slotted for ½" bars. Also 200 h.p. motor for same 550 volts, 3 phase, 60 cycle. Address Box 46-411 care Paper Trade Journal. J-4

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BOARD MACHINE

65 to 90 inch trim for manufacture of Folding Box Grades for private use. Would consider old machine with rehabilitation possibilities. Located New York, New Jersey, Pennsylvania or New England area.

Box 46-389 care Paper Trade Journal.

J-4

WANTED—Adjustable Grocery Bag Machines with printing attachment; also rewinders 45" to 72". Camerons, Langston or Kidder. Address all replies to Box 46-387 care Paper Trade Journal. J-4

WANTED—Brightwood Box Machine. Address Box 46-33 care Paper Trade Journal. TF

WANTED

WANTED

25 to 50 dryers about 100" face

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WANTED

Complete Saw Mill for Export.
State condition and capacity.

ROSS PAPER MACHINERY COMPANY
265 Passaic Street, Newark 5, N. J.
Tel. Humboldt 2-2177

J-4

WANTED

1—156" Hamblet cutter, duplex, extra heavy, with layboy

Box No. 46-446 care Paper Trade Journal. J-11

WANTED

WANTED

Fourdrinier Section and Rolls, Press Rolls, Felt Rolls, Cone Pulley Drives and other parts except driers, for 94" approx. Paper Machine. Address Box #46-408 care Paper Trade Journal. J-4

WANTED — DISCARDED PAPER MILL FELTS. HIGHEST PRICES paid for all kinds of discarded paper mill felts. LARGE or SMALL QUANTITIES accepted. Prices quoted immediately on receipt of samples. ADDRESS: GLASER AND YOFFE, INC., 80 NORTH MAIN ST., NATICK, MASS. TF

WANTED—Four room apartment—Cleveland or vicinity. Address Box 46-298 care Paper Trade Journal. TF

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic Presses, Sheridan Presses, Dryers. Address Box 46-32 care Paper Trade Journal. TF

WANTED—Twelve or more dryers, size to be 96" face. 104" shoulder to shoulder of journal. 42" dia. Address Weaver-Wall Company. Avery, Ohio. J-25

WANTED

WANTED—Old Evaporator Tubes 1", 1¼" and 2" O. D. Why sell them for junk? Write us if you have any. Also when you get ready to change over. S. Bender, P. O. Box 271, Shreveport, La. A-8

WANTED—45" to 65" Hamblet or Beck Sheeter. Address Box 46-422 care Paper Trade Journal. J-4

WANTED—Straight pass drying equipment to handle paper coating process. Address Box 46-398 care Paper Trade Journal. TF

WANTED—Used Single Face Corrugator 36", 50" or 60" Wide B Flute. State size of rolls, make, price, condition and delivery. Address Box 46-415 care Paper Trade Journal. J-11

WANTED—Camachine Slitter and cutter, small two or three color rotary press, mill cutter, flat bed cutter. Address Box 46-444 care Paper Trade Journal. J-4

USED EQUIPMENT WANTED — Urgently need one green, Schopper or Williams Freeness tester. Reply giving age, condition and price. Address Box 46-447 care Paper Trade Journal. J-11

REQUIRE one extension pile delivery Miehle #1, #2, #2/0, #3 either one. Universal Folding Box Co., Inc., Hoboken, N. J. J-25

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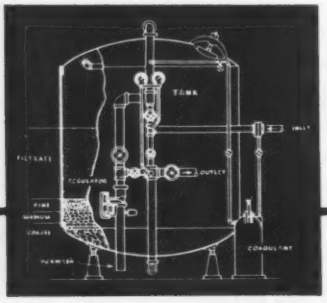

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SKF Industries, Inc.
Timken Roller Bearing Co.
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Black-Clawson Company
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Downingtown Mfg. Co.
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Stickle Steam Specialties Co.

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Ross Engineering Corp., J. O

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Lovejoy Flexible Coupling Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works
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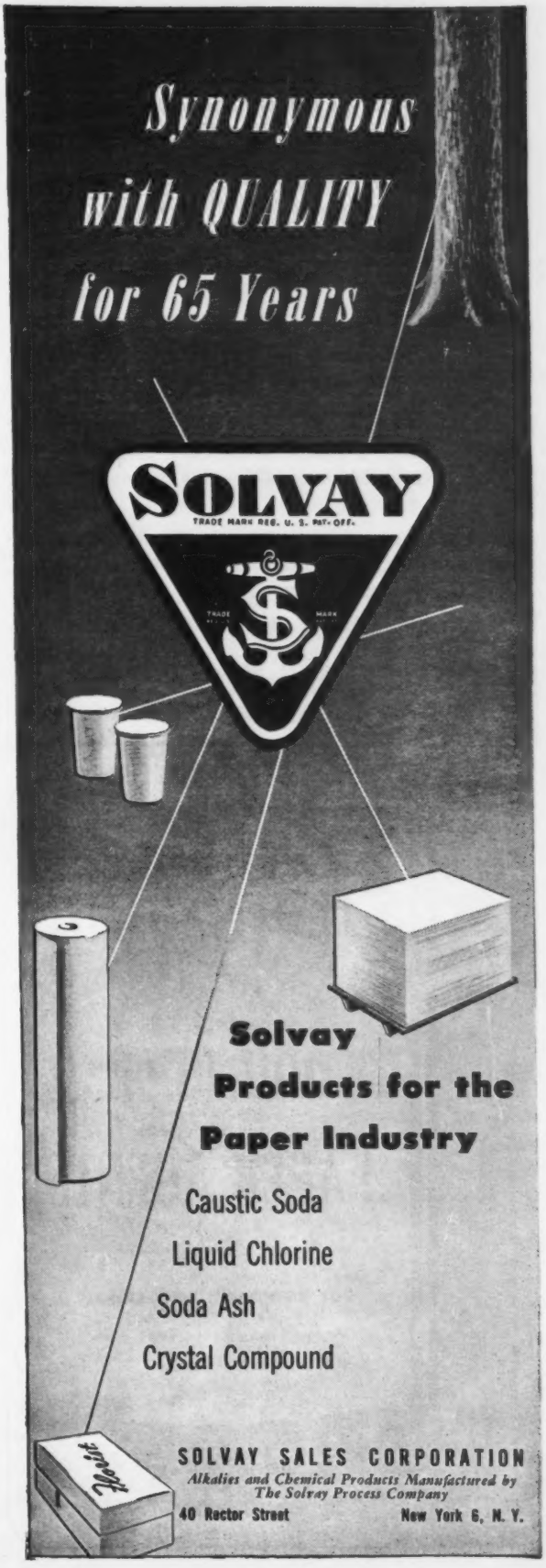
Dilts Machine Works
Thomas W. Hall Co.
Noble & Wood Machine Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
South Wabash Engrg. Co.
Taylor Stiles & Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Steamaire Company
Valley Iron Works Co.

DE-INKING
Dilts Machine Works
Hardinge Co., Inc.
Kinsley Chemical Co.
Shartle Bros. Mach. Co.

DIGESTERS
Biggs Boiler Works Co.
Pusey & Jones Corp.

DOCTORS
Bird Machine Company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CONTINUOUS BEATING: Three No. 2 Claflins in series. Furnish of Southern Bleached Kraft — 50 tons/day. Pulping operation—through three Claflins—to beaters used only for mixing—to Jordans for final cutting control to paper machine. Total of 540 h.p. on Claflins. Freeness drop from 685 c.c. to 310 c.c.

BATCH BEATING: No. 2 Claflin — Furnish of Southern Bleached Kraft—2,000# batch. Stock pumped from chest into Claflin to another chest. At end of 15 minutes and two passes, Freeness 548, a drop of 72 c.c. At end of 30 minutes, after 4 passes, Freeness 476, drop of 144 c.c. At end of 45 minutes and 6 passes, Freeness 400, drop of 220 c.c. Mullen 72%—548 c.c., 102%—476 c.c. and 145%—400 c.c.

Adaptable also for brushing out fibre bundles and lumps with minimum degree of cutting and reduction of Freeness. (Tissues).

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Montague Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.

DOCTOR BLADES
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Lodding Engrg. Corp.
Montague Machine Co.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers
United States Rubber Co.
Westinghouse Electric Corporation

DRIERS
Black-Clawson Company
Murray Mfg. Co., D. J.
J. J. Ross Company
Ross, J. O., Engineering Corp.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Davis, Frank H., Co.
De Laval Steam Turbine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
General Electric Company
Rodney Hunt Machine Co.
Montague Machine Co.
Moore & White Co.
Murray, D. J., Mfg. Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
T. B. Wood's Sons Co.
Valley Iron Works Co.
Westinghouse Electric Corporation

DRUMS
Fibre Making Processes, Inc.

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Fibre Making Processes, Inc.
E. D. Jones & Son Co.
Moore & White Co.
Noble & Wood Machine Co.
Norwood Engrg. Co.
D. J. Murray Mfg. Co.

DYESTUFFS
Calco Chemical Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuff Corp.
National Aniline Division, Allied Chemical & Dye Corp.
Paper Makers Chemical Department, Hercules Powder Co.
C. K. Williams & Co.
Witco Chemical Co.

EMBOSSING ROLLS
Northern Engraving & Mch. Co.
Roehlen Engraving Co.

EVAPORATORS
Black-Clawson Company
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
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Hardinge Co., Inc.
Merrick Scale Mfg. Co.
Leeds & Northrup
Wallace & Tiernan

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bloomfield Woolen Co.
Bulkley, Dunton Pulp Co., Inc.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.

FELT CONDITIONERS
Steamaire Company

FELT GUIDES
Moore & White Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
Aluminum Flake Co.
American Colloid Co.
Amer. Cyanamid & Chem. Corp.
Amer. Resinous Chemicals Corp.
Johns-Manville Sales Corp.
W. H. Loomis Talc Corp.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
Cochrane Corp.
Hardinge Co., Inc.
Moore & White Co.
J. O. Ross Engrg. Corp.
Witco Chemical Co.
Worthington Pump & Machy. Corp.

FLOORING, GRATING & TREADS
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Klemp
Norton Co.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
United States Rubber Co.

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Oliver United Filters
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.

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FREENESS TESTERS
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Downingtown Mfg. Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

GRINDERS
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Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Wks.

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Norton Company
United States Rubber Co.

HEATING, VENTILATING AND AIR CONDITIONING
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Armstrong Machine Works
Cochrane Corp.
E. D. Jones & Sons Co.
General Electric Co.
Grinnell Company
Leeds & Northrup
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Ross Engineering Corp., J. O.
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Worthington Pump & Machy. Corp.

HOISTS
Appleton Machine Co.
Dilts Machine Works
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.
Reading Chain & Block Corp.

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Raybestos-Manhattan Inc.
Manhattan Rubber Division
United States Rubber Co.

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Steamaire Company

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Cochrane Corp.
The Foxboro Company
General Electric Company
W. & L. B. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taber Instrument Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Wallace & Tiernan Instrument Co.

INSULATION
Johns-Manville Sales Corp.

JOINTS
Perfecting Service Company

JORDAN FILLINGS
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Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Valley Iron Works Co.

KNOTTERS
Fibre Making Processes, Inc.

LABORATORY EQUIPMENT
Appleton Machine Co.
Bauer Brothers Co.
The Bigge Boiler Works Co.
W. H. & L. D. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works

LAY BOYS
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Moore & White Co.
Shartle Brothers

LINTER COTTON
The Railway Supply & Mfg. Co.

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Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

LUBRICATORS
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MATERIAL HANDLING
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Reading Chain & Block Company

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Montague Machine Co.
Lobdell Car Wheel Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

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Steamaire Company

MOISTURE CONTENT CONTROL
Steamaire Company

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De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric Corporation

NOZZLES
Steamaire Company

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Johnsen Corporation
Shartle Brothers Machine Co.

PACKING
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The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
United States Rubber Co.

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Downingtown Mfg. Co.
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Moore & White Co.
Pusey & Jones
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
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Montague Machine Co.
The Sandy Hill Iron & Brass Wks.
Valley Iron Works Co.

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The Rust Engrg. Co.

PAPER TUBE MACHINERY
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Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.
South Wabash Engrg. Co.

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Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.
Waldron Corp., John

PENSTOCKS, WELDED STEEL
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Harrington & King Perforating Co.
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Crane Company
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J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Timken Roller Bearing Co.

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The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

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The Bigge Boiler Works Co.

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Dietz Machine Works
Farrel-Birmingham Co.
Fibre Making Processes, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
South Wabash Engrg. Co.
Valley Iron Works Co.
Waldron Corp., John
Weber, Herman G.

PULPERS
Bauer Brothers Co.

PULPS
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Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
Elof Hansson, Inc.
Lyddon & Co. (America) Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PULPSTONES
Norton Company

Continental
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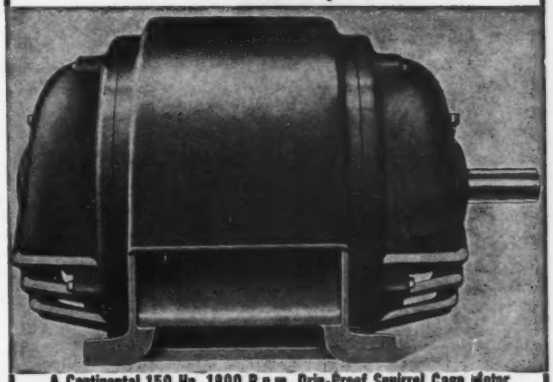
1 to 600 Hp.



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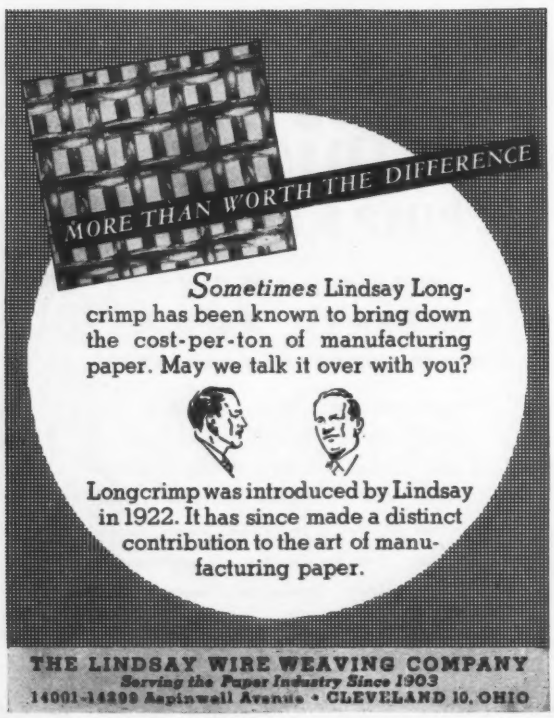
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Worthington Pump & Mchy. Corp.

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Taylor-Stiles & Co.

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Pusey & Jones
Ross Engineering Corp., J. O.
Valley Iron Works Co.

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The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

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Bauer Brothers Co.
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The Hermann Manufacturing Co
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Murray, D. J., Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Refiner Corp.
Valley Iron Works

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Armstrong Machine Works
Bird Machine Company
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Shartle Brothers
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan
Westinghouse Electric Corporation

RESINS
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Amer. Resinous Chemicals Corp.
Monsanto Chemical Co.
The Resinous Prod. & Chem. Co

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Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp
Lobdell Co.
Montague Machine Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Philbrick Engrg. & Machine Co
Pusey & Jones Corp.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
Roehlen Engraving Co.
J. J. Ross Company
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnetic Mfg. Co.
Stowe-Woodward, Inc.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
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Stowe-Woodward, Inc.

ROLL STANDS
Cameron Machine Co.
The Kohler System Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.

ROOFING MATERIALS
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ROTARY BOILERS
Biggs Boiler Works

SATURATING MACHINES
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Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

SAVEALLS
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SCALES
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Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.
Union Machine Co.
Union Screen Plate Co.

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Appleton Machine Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Harrington & King Perforating Co.
Hendrick Manufacturing Co.
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
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Shartle Brothers Machine Co.
Valley Iron Works Co.

SHEET MACHINES
Thomas W. Hall Co.
The Hermann Manufacturing Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
Valley Iron Works Co.

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Improved Paper Machy. Corp.
Moore & White Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

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Carthage Machine Co.

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Amer. Resinous Chemicals Corp.
Black-Clawson Company
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Flintkote Company
Monsanto Chemical Co.
National Oil Products Co.
Paper Makers Chemical Department, Hercules Powder Co.
Philadelphia Quartz Co.
Pioneer Salt Company
Socony-Vacuum Co.
Stein, Hall & Co., Inc.

SLIME CONTROL
Falls Chemical Products Co.
Magnus Chemical Co.

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Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Smith & Winchester Mfg. Co.
South Wabash Engrg. Co.
Valley Iron Works Co.
Waldron Corp., John

SMOKE STACKS
The Biggs Boiler Works Co.

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The Spray Engineering Co.
Steamaire Company
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Clinton Industries, Inc.
National Starch Products, Inc.
Stein, Hall & Co., Inc.
STATIC ELIMINATORS
Steamaire Company
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Babcock & Wilcox Co.
Cochrane Corp.
Johnson Corp.
Perfecting Service Company
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.
STEEL TANKS
The Biggs Boiler Wks. Co.
STRAPPING & STRAPPING MACHINES
Acme Steel Company
The Stanley Works
STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.
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Black-Clawson Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Westinghouse Electric Corp.
SULPHUR
Amer. Cyanamid & Chemical Corp.
Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company
SULPHUR BURNERS
Valley Iron Works Co.
SULPHUR DIOXIDE
Ansul Chemical Company
SUPERCALENDERS
B. F. Perkins & Son, Inc.
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W. H. Loomis Talc Corp.
TANKS
Cochrane Corp.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
The Noble & Wood Machine Co.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
Rodney Hunt
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Stowe-Woodward, Inc.
United States Rubber Co.
Waldron Corp., John
B. F. Perkins & Son, Inc.
Testing Machines, Inc.
THICKENERS, DECKERS AND SAVEALLS
Bird Machine Company
Bulkley, Dunton Pulp Co., Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Hardinge Co., Inc.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.
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Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company
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Ingersoll-Rand Co.
The Stanley Works
Walworth Company
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Automatic Transportation Co.
TRAPS
Armstrong Machine Works
Cochrane Corp.
Crane Co.
Grinnell Company.
Johnson Corporation
Shartle Bros. Mch. Co.
TUBS
Rodney Hunt Machine Co.
Noble & Wood Machine Co
Shartle Brothers
Valley Iron Works Co.
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Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.
Westinghouse Electric Corp.
Worthington Pump & Machy. Corp.
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Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
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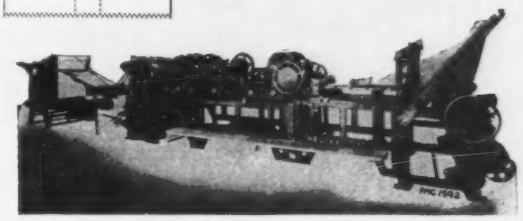

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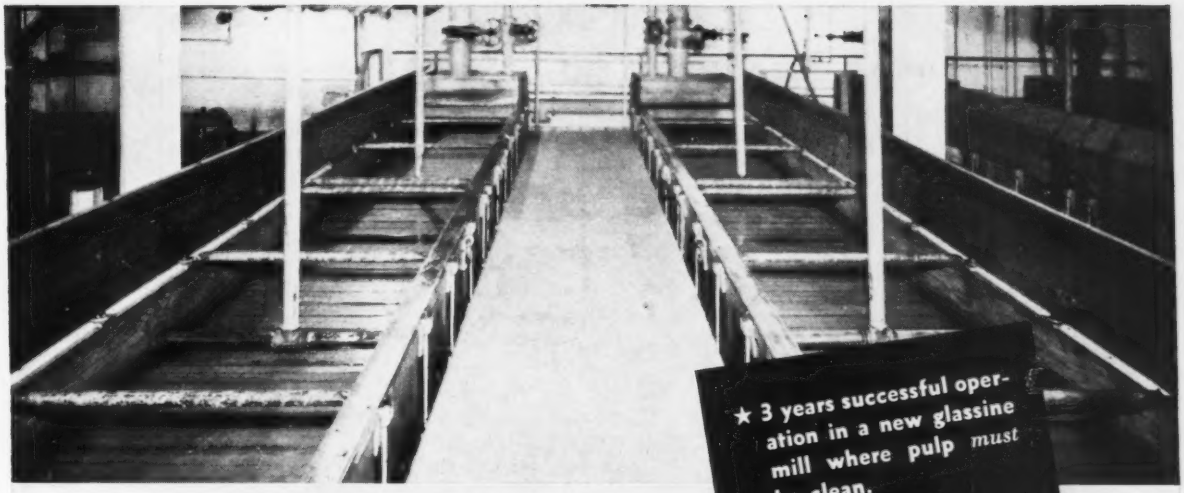

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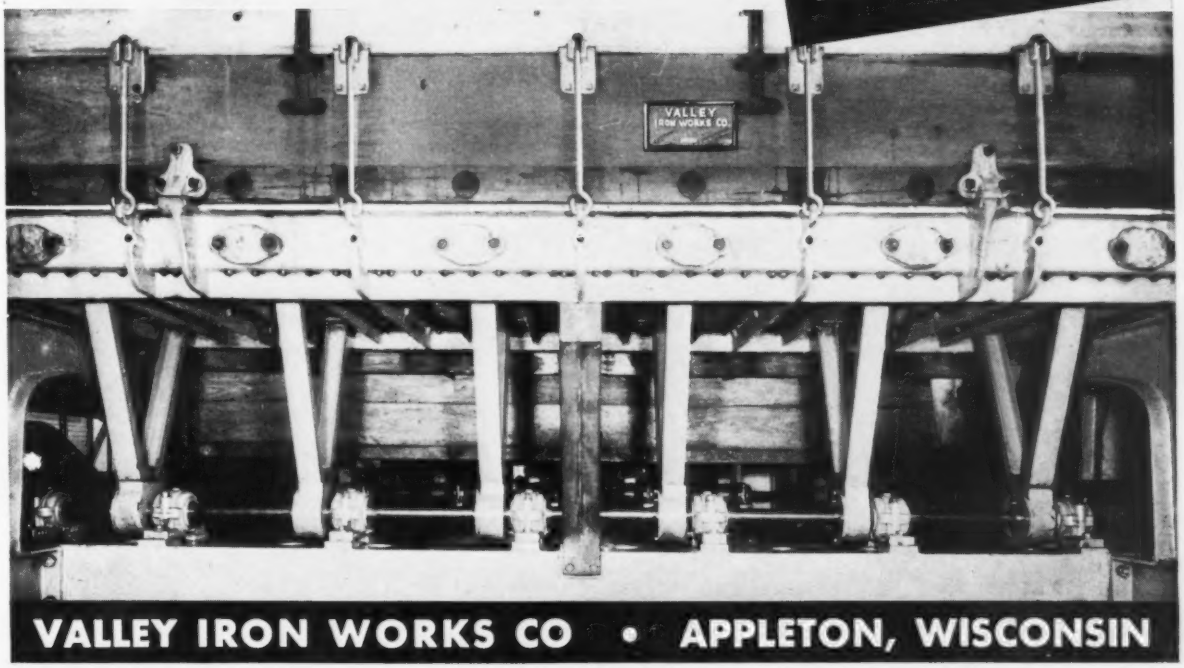

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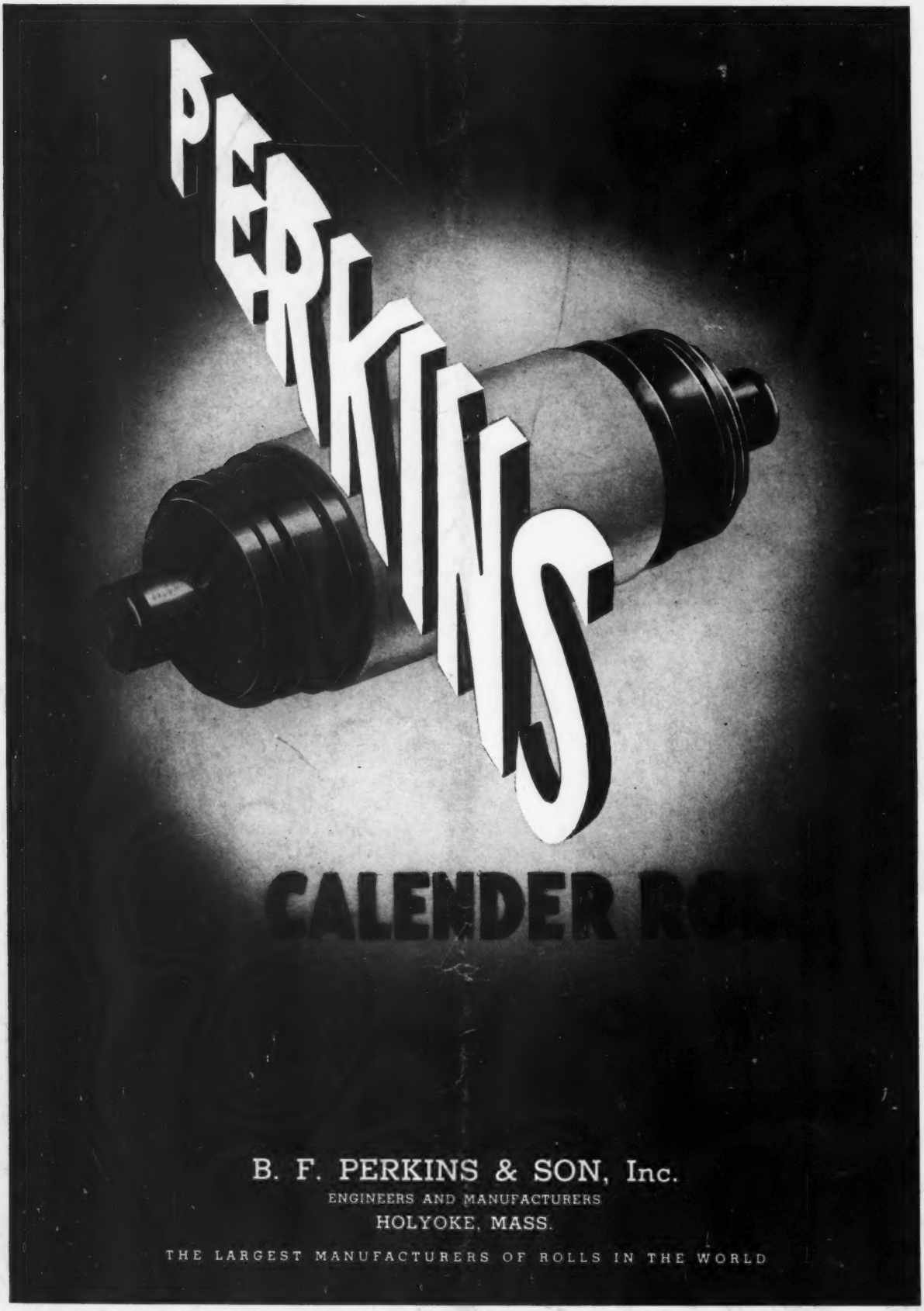

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